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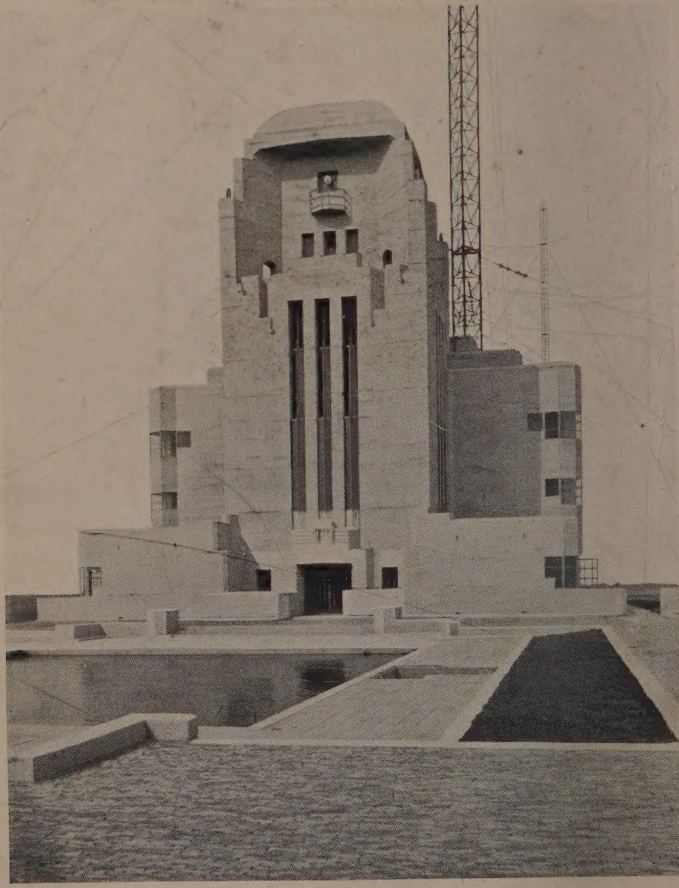

Modern Dutch Concrete Design : the Wireless Station at Kootwyk

ARCHITECTURE

by

A. L. N. RUSSELL
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CHAPTER I

INTRODUCTORY

ON the cover of a book which was recently published, dealing with a fascinating district of France, there occur the words: "[This book] is intended to stimulate, rather than to satisfy, the reader:" and the same sentence might serve as a foreword to any book which sets out to deal, in one short volume, with the whole wide subject of Architecture. For anyone whose appetite is once whetted, there is no lack of satisfying books which will help him to study whatever branch of the subject specially appeals to him. Whether he wants to know about English churches, French chateaux, the Florentine palaces of the early Renaissance, Baroque fountains, or Norman doorways, he will find books as simple or as abstruse as he desires, with a profusion of beautiful illustrations; and if he is lucky enough to have opportunities for travel, here is a fresh objective and a new interest for every holiday, whether it be long or short.

Most of us are prepared to be interested in architecture; but we feel that a great deal of technical knowledge is needed, which is just beyond our reach. The buildings all around us play an important part in our ordinary lives, and whenever we go to a new place for a holiday we spend a certain amount of time looking at churches, castles, and other architectural "sights." Yet very few of us have any very clear and connected idea of how the different styles and features fit into the general scheme. We are uncomfortably vague about all sorts of things which we feel we ought to understand. We can, perhaps, distinguish between Norman and

Gothic ; but where does " Romanesque " come in ? How, exactly, does it come about that the sort of pillar or column which we associate with Greek and Roman temples has now become a common adornment of our town-halls and other buildings ? What does " Baroque " mean, and what is the proper use of terms like " Georgian," " Renaissance," and " Classic " ?

On the subject of houses, certainly, our standard of knowledge is probably higher nowadays than it was a generation ago, when the lady novelist was apt to describe her hero as " leaning against the threshold of the door," or " stepping briskly over the lintel " as he entered the house. But people of wide reading and culture will talk unconcernedly of an " Ionic Cross," confusing Celts of the Dark Ages with Greeks of the time of Pericles.

This book aims at breaking down the alarming barriers of technicality. It tries to show in a simple way how the form of buildings in different periods—i.e. what we call " the historic styles "—was due to the materials which the people had to build with, to the special purpose of the building, or the special conditions of the time, and to give a clear and consecutive picture of the gradual development, so that anyone may realize how one style is related to another. In order to keep the size of the book within the prescribed bounds, its scope had somehow to be limited ; and the best way of doing this seemed to be to keep fairly strictly to the work of those countries and those periods which have had a direct influence on the architecture of western Europe. It has meant passing over much that is of absorbing interest—in particular, the wonderful buildings of China, India, and other eastern countries—but this sacrifice makes it possible to give a clearer account of what most nearly concerns ourselves and our own times.

The story of Architecture touches people's lives at every point. There are no formulas or technical details to be mastered before we can understand and enjoy it ; and that in itself may encourage us to embark upon it, for in the case of so many of the subjects which we enthusiastically attack —botany or astronomy, for instance—we find that even the simplest version of the facts very soon takes us out of our depth. Flowers, stars, and birds, too, are all elusive : when we have time or opportunity to look at them, they are not to be found. But—apart from a certain tendency to westward migration which has recently become noticeable in England—buildings are always there when we want them.

Let us start off, then, with a feeling of cheerful anticipation, for the story is much less complicated than it is generally supposed to be and much more interesting than it is generally made to appear. It is the story of human invention ; of how in every age and every country men wrestled with the problems of their own times ; and of the splendour and the beauty which, by hand and brain, they brought into being and have left to us as a heritage.

CHAPTER II

MESOPOTAMIA AND EGYPT

THE first traces of architecture which we have so far discovered are in Mesopotamia — "the Country between the Rivers" Tigris and Euphrates; and we can date the earliest of them at about 5000 B.C., two thousand years before the Pyramids of Egypt. Civilization could only be developed when people began to live together in a settled state instead of roaming about in search of a livelihood. And they could only settle down when they had found a fertile country and some means of producing food for themselves year by year without going farther afield. The valleys of the Tigris and Euphrates, like the valley of the Nile, provided exactly what was wanted—a rich soil and a constant supply of water; and scientists have lately made the interesting discovery that in Palestine, between Egypt and Mesopotamia, grows the original wild wheat, the parent stock of the corn which has been the foundation of civilized life ever since the earliest times.

And here, straight away, we have an example of how buildings take their shape and character from the natural building materials of the country. For in Mesopotamia all the soil that is not sand is clay, the rich mud brought down by the rivers and deposited along their banks. The Egyptians had a splendid supply of building stone, which they quarried from the hills along the Nile valley, but in Mesopotamia there was practically no stone available and the builders had to do what they could with mud, reeds, straw, and palm-trees. It does not sound a very hopeful collection of materials with which to defy the centuries,

and under the circumstances it is astonishing that any traces of their work are left at all. Out of the clay they made bricks—not shaped like ours, but long and thin—with a mixture of straw to bind the material together. And except when they wanted them specially hard they did not burn them in kilns as we do, but left them to bake in the sun.

For people who built in brick it would have been very difficult to construct temples of the Egyptian type, because of the difficulty of roofing their great halls. The Egyptians had rows of stone columns in their large rooms, and laid stone beams across from column to column, with flat roofing-slabs on the beams. But the Mesopotamians evolved an entirely different type of temple in the form of a tower or terraced mound, with a broad roadway winding up it in a spiral, the actual shrine being on a platform at the top. This style of building exactly suited the materials they had available, for the core of it was a solid mound of earth faced with walls and battlements of brick. The terraces were paved with brick and sometimes covered with asphalt or bitumen, which was also used as mortar. This is the sort of building that we read about in the account of the Tower of Babel, and it was from these high terraces that the Chaldean astronomers watched the stars. Astrology was an important part of their religion, and the design of the towers was symbolical as well as practical: one temple is described as having seven stages all coloured differently, each one in the special colour of one of the seven planets.

In Babylon and Assyria, the palaces and all the other important buildings were raised on great mounds faced with brick. This was partly for defence, and partly because the country was liable to be flooded. There was plenty of soil and plenty of slave labour, but the extent of these

raised platforms is stupendous: it has been reckoned that the platform of the palace at Nineveh would have taken 10,000 men twelve years to build. The top was reached by paved ramps or inclines wide enough for chariots, and by great flights of steps, twenty feet broad and shallow enough for horses to go up and down. These towns and temples, raised above the level of the flat plain, must have had a most impressive effect, although the buildings themselves were probably unbeautiful. Even now, when the brick-work has crumbled into a shapeless mass, the great mounds are left standing all over the country to mark their sites.

In late Assyrian times metal-work and sculpture reached a very high level: the palace gates were of bronze, flanked by figures of winged bulls, and the corridors and halls often had a dado of glazed brick in bright colours, or a stone[1] dado with sculpture in low relief, showing battles and sieges and hunting-scenes. There is a splendid series of sculptures in the British Museum, from the Palace of Assur-banipal (seventh century B.C.), depicting a royal lion-hunt. In a long series of scenes we are shown every detail of the proceedings, from the grooming of the horses in preparation for the hunt to the final scene when the king makes an offering to the gods over the bodies of the dead beasts, which are carried in by the huntsmen, six men to a lion, and laid before the altar.

The Assyrians produced even better sculptured reliefs than the Egyptians, and by this wonderfully detailed picture-writing in stone they have left a fascinating record of their life, and also of their methods of fighting. In another series of reliefs we see the troops fording rivers; the assault of a city, with sappers at work, scaling ladders, and a primi-

[1] In contrast to the flat river country, the eastern borders of Assyria were mountainous, and here stone was available.

tive form of armoured car used as a battering-ram ; then the city taken and delivered to the flames, and the torture and captivity of the inhabitants.

One of the main problems of architecture in all the ages has been to put a roof over a large space ; and there are two alternative methods by which this may be done—the " post and beam," or the arch. In the first the arrangement depends entirely upon the length of the beams. If you have to roof a hall 60 feet broad, and you cannot get beams longer than 20 feet, there must be two rows of columns so that the span is divided into three 20-foot divisions. This system is called " trabeäted," from a Latin word meaning " beam " : it is the system which the Greeks and Egyptians used, with beams sometimes of wood and sometimes of stone or marble, and it is the system generally used in modern buildings because we can now make beams of steel and concrete up to almost any length we require. But if you have no beams of any sort and your material is in small pieces, either brick or stone, you can wedge these pieces together in the form of an arch or vault (which is just a continuous arch) so that they all help to support one another ;[1] and you can make this arch bridge the space from wall to wall without any supports in between. This gives a clear floor-space, which is obviously a great advantage.

We know that in Mesopotamia there were no stone beams to be got and very little timber for cutting into wooden beams, so it is just the place where we should expect to find early experiments in vaulting and arch-building. Unfortunately the brick vaults built in Mesopotamia have nearly all collapsed, and in most cases there is nothing to show how the buildings were roofed except the enormous thickness of the walls, which can only have been provided

[1] See page 102 (note).

to resist the thrust of a vault. Some of them are as much as 28 feet thick. Very few columns have been discovered, and probably the buildings which were not vaulted had timber beams resting on wood posts covered with sheets of metal, all of which have now perished. Solomon's Temple at Jerusalem, built about 1000 B.C., seems to have been Assyrian in style : it was chiefly of cedar-wood, overlaid with gold.

The fact that neither the Mesopotamians nor the Egyptians made much progress in vaulting was no doubt largely due to the climate they lived in. In a country where it was always fine out of doors, it did not so much matter if it was not possible to provide spacious rooms unobstructed by columns, for any ceremonies which needed a large clear space could be held in an open courtyard. It was in the countries farther north that vaulting was developed to its fullest extent.

Except as an object-lesson, the architecture of Babylon and Assyria is not of very great importance. But when we come to Egypt it is a different matter, for her harbours were on the Mediterranean, where the galleys of all the countries which lay round the inland sea—Greece and Ionia, Phœnicia and Crete—were continually carrying merchandise and new ideas from one people to another, as they crept along the coast from island to island. And as the Egyptians seem to have developed a settled life and civilization before any of the other Mediterranean peoples, they had a great influence on their neighbours.

But after saying this we have to admit that Egypt presents the most extraordinary example of unintelligent stagnation in the whole course of history. Before 3000 B.C. Egyptian buildings and Egyptian culture had taken the shape we know, and they went on practically unaltered through thirty

centuries—a period of time so long that it is almost impossible to realize. It was a country where the whole of life was a matter of unvarying routine; for Egypt is nothing but a narrow green strip of land, 30 or 40 miles broad, along the Nile, with the desert pressing close in on either hand. Regularly once a year the river overflows and leaves a layer of rich mud on the fields which makes them extraordinarily fertile. This fertilizing being done for him without effort on his part, the Egyptian merely had to sow his seed and could then collect at least two heavy crops a year. The weather is much the same, day after day, and except for one occasion when Moses and Aaron upset the natural order of things by producing various excitements which were not in the calendar, life in Egypt was a fairly monotonous business and not calculated to develop individuality.

It would be quite impossible to imagine any of our industries or arts marking time for a thousand years, or to think of our painters going on, century after century, drawing figures in the stiff attitudes which we see in Anglo-Saxon manuscripts. But this is exactly the sort of thing that happened in Egypt, and not for a thousand years but for three thousand. One of the strangest of all the conventions to which the Egyptians clung so tenaciously is their odd way of drawing the human figure. The head is always turned sideways, but the eye is drawn as in a full-faced view, and so are the chest and shoulders; the legs and arms and the rest of the figure, however, are again drawn sideways. It is a very primitive method of drawing, found also among other backward races. Every feature is drawn in the position in which it shows its shape most clearly and distinctively, and the parts are fitted together just as a child builds up the figure of a man, by drawing a head and then sticking on a body, arms and legs, ears, etc., all without any governing

idea of the figure as a whole. The Egyptians used the same method for carved decoration in relief, which was really diagrammatic picture-writing in stone; but all the time they could, if they wished, draw figures properly, and some of their portrait-statues are full of life and character. They were tied down by a strict routine to working in a particular way; the craftsmen proceeding quite mechanically by a rule of thumb with very little chance of using their own intelligence. Several thousand years' practice in doing things in the same fashion naturally made them marvellously proficient, and in technique and craftsmanship the work of the ancient Egyptians is absolutely supreme. But with all the elaboration and the richness of the work, there is too often a lack of vitality and of the refinement which comes from the active mind and the individual taste of the artist himself.

It was much the same with Egyptian architecture. When we first come across it, it had reached an astonishing state of development, but it never advanced very much further. The oldest important Egyptian buildings that we know about are the Pyramids. Of these the Great Pyramid of Gizeh (the largest, though not the earliest) was built by the Pharaoh Khufu, whom the Greeks called Cheops, somewhere about 2900 B.C. But the civilization which could build the Great Pyramid must have been already an old one, so that for the beginnings of Egyptian architecture we are plunged a long way back into the blank recesses of the past.

The Egyptians took more trouble about their tombs than about anything else, for they thought that it was absolutely essential that the body should be preserved, as it had to play its part in the after-life; and the tomb was also a dwelling-place for the Ka or spirit while it was separated

from the body. The Great Pyramid was built to cover and safeguard the coffin of the Pharaoh Khufu. The coffin was about 7 feet long, by 3 feet broad, and the mountain of solid stone which was heaped over it was 480 feet high and covered 13 acres of ground.[1] It was first built roughly in step form as it appears to-day, and then the sides were cased smoothly with limestone slabs fixed from scaffolding: unfortunately the casing has been stripped off and used as building stone in the city of Cairo. We do not know how the stones were got into position, but they were probably moved on rollers along an inclined plane of sand leading up to the required height. The man who conceived this prodigious work was a long way removed from the primitive savage, even if he lived almost 5,000 years ago, and the government which could organize it and carry it through must have been well established and more than ordinarily capable.

The actual burial chamber of the King is near the middle of the pyramid, and its roof has to support the crushing weight of 300 feet of solid stone piled on top of it. The ingenious method by which this enormous load is carried shows how skilful the Egyptians were in the art of construction. Above the roof of the King's Chamber they formed five smaller chambers, one on top of the other, with a lintel of granite about 6 feet thick between each of them. The uppermost chamber has a pointed roof consisting of two great slabs leaning towards each other, and these (acting as a rudimentary form of arch) help to discharge the weight to either side.

The Pyramids are examples of great building, but not of great architecture. In fact, there is probably no form in which so much material could be arranged in one mass

[1] A larger area than that of Lincoln's Inn Fields in London.

and produce such an unimpressive effect, for the slope of the sides makes it impossible to realize its height and gives an impression of squatness. The Builders were chiefly concerned with permanence and solidity, and there is certainly no other form which could express these qualities so well. But all the brain-work of designers and officials, and all the sweat of 300,000 slaves hauling the huge stones from the quarries across the Nile under the fierce African sun, did not suffice to keep Khufu's coffin undisturbed. The knowledge of the gold and jewels buried with the mummy set people searching for royal tombs long before scientists began to study Egyptology, and a great many of them were rifled even in Ancient Egyptian times. The Great Pyramid was entered by Arabs in the ninth century A.D., and they found " a stone trough in which lay a stone statue in human form, enclosing a man who had on his breast a pectoral adorned with precious stones, and a sword of inestimable value, and on his head a carbuncle the size of an egg, brilliant as the sun, having characters which no man could read." All that they left was the " stone trough " or sarcophagus.

The ordinary buildings of the Egyptians were apparently of brick or wood, for they have perished and left no trace. But we have a good many paintings of houses with porticoes of slender wooden columns, carved and decorated in bright colours, with balconies and loggias under the flat roof, and the stiffest of formal gardens set out with rectangular fish-ponds. Considering the magnificence of the Pharaohs and their Court, it is strange that we have no remains of their palaces. The only other buildings left, apart from the tombs, are temples. These were not single buildings like the temples of Greece and Rome and like our own churches, but each temple consisted of a walled enclosure

with various halls and courts, and rooms for the priests and attendants, as well as the actual sanctuary which only the chief priest and Pharaoh himself might enter. The temple was often approached up a long avenue of seated statues or sphinxes leading to the main gateway, through which one passed into the outer court. The gateway was flanked by two "pylons"—square towers built, in the usual Egyptian fashion, with the sides sloping steeply outwards towards the base. After passing through the outer court, which had colonnades round it, and a smaller inner court, one came to a great hall with a stone roof held up by closely-ranked columns. This was as far as the general public were allowed to penetrate, and an atmosphere of grandeur and solemnity was produced by a very clever arrangement of the lighting effects. Down the centre of the hall ran a double row of columns, taller and more massive than the rest and supporting a higher ceiling. Their capitals were seen in strong daylight, for there was a row of clerestory window-openings in the space above the next (and lower) line of columns on each side (Fig. 1). On either hand were rows of these lower columns, sometimes forming six or seven parallel aisles, becoming more and more dimly lighted as they receded farther from the centre. The farthest parts of the hall would be lost in mysterious gloom, and the general effect as one came in from the glare of the sunlit courtyard must have been exceedingly impressive. At the end of the central vista was the small doorway leading to the sanctuary of the god, who was supposed actually to dwell there (like Jehovah in the Holy of Holies), inhabiting for the time being either a symbolical statue or the body of some sacred animal.

In these temples we come in contact, for the first time, with an architecture of stone columns, and their design

reminds us immediately of the all-pervading influence of the Nile. Just as the sound of the sea forms a continual background to the lives of people who live beside a rocky coast, so the river and the life of the riverside were continually in the mind of the Egyptian craftsman. The riverside plants, all connected in some way with religious symbolism because the river was itself a god, supplied

FIG. 1.—Hall of an Egyptian temple (in section).

most of his decorative motifs ; and of these the lotus and the papyrus plant were the favourites. Some of the stone columns have ribbed shafts suggesting bundles of papyrus stems (Fig. 2. *a*). The very cord which ties them together is carved in stone as a necking below the capital, and there is sometimes another near the bottom. Even when the separate stems or ribs are merged into a plain round shaft the columns have a slightly bulbous form with carved root leaves clasping the bottom of the stem and a pattern of

horizontal lines at the very bottom of all to represent the water out of which the column is supposed to be growing.

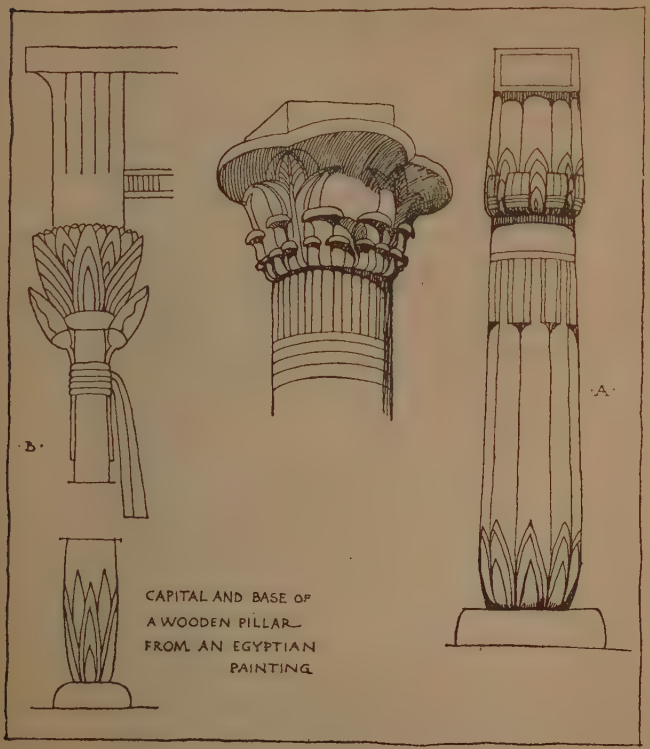

FIG. 2.—Egyptian columns and capitals.

Another form of column and capital (Fig. 2. *b*) seems to be reminiscent of a round wooden post—perhaps the palm stem used as a veranda-post in front of a primitive mud

building—with palm fronds or lotus buds and flowers tied to the top for decoration.

Most of the Pharaohs built temples, and one cannot help feeling that in a good many cases they thought more of advertising their own achievements and splendour to an admiring posterity than of doing honour to the gods. And after all it came to very much the same thing in the end, for the Pharaoh " endowed with life, like Rā, for ever " was himself a god. " His word on any subject was final, his authority limitless ; in his person he united the intelligence and strength of all beings in heaven and on earth : men lived by his grace only, and at a word from him they were slain. In short, the Egyptians were the serfs and bondmen of the king, the counterpart, image and symbol of the gods of heaven." [1] (But then various bulls, rams, crocodiles, cats, and hippopotami were also images and symbols of the gods in heaven, who numbered about 2,000, so it was all very complicated.)

Bombastic accounts of the Pharaohs and their doings, with sculptured illustrations, covered the outsides of their buildings, and were spread indiscriminately over the surface in a way which offends our modern sense of architectural propriety ; for they are often quite out of scale with the other details of the building and are applied without any regard to the architectural forms—rather in the way that posters are stuck about nowadays on some of our town buildings. But we have to realize that in those times people did not follow " æsthetic rules " as we do. They never thought of a building, or even of a statue, as a " work of art," but simply considered whether it fulfilled its purpose in a worthy fashion. The proportion of every building, and all its details and ornamentation, were governed by questions of

[1] Wallis Budge (in British Museum Guide).

ritual and symbolism, and the paintings and sculpture which we think of merely as decoration had actually a very definite practical purpose ; as in the case of the wall-paintings in the tombs, which contained magic formulas and directions to help the soul on its journey to the other world, and supplied the answers that had to be made to the questions it would be asked at the Judgment.

To sum up our impressions of Egyptian building craft :— It was owing to the abundance of good stone obtainable in great lengths that the Egyptian style was essentially "trabeäted" ; that is, based on a system of horizontal beams. And a trabeäted style it remained ; for, as no new circumstances ever had to be faced, experiments in new directions were never necessary. Though the Egyptians knew of the arch and used arches occasionally in underground construction (where the sideways thrust was well confined), they never developed arch-building to any extent.

For at least 3,000 years they continued in a state of intellectual paralysis. Even foreign conquerors like the Nubians and the Greek Ptolemies, the successors of Alexander, were absorbed and succumbed to the spell. It was as though the unchanging country itself exercised some uncanny influence, and one is tempted to surmise—without a vestige of historical evidence to support the theory—that the Egyptians had passed through the vigorous stage of their development before they left their original home, somewhere south of the Sudan in the mysterious country of Pûnt, and, like the Lotus-Eaters, came to "a land where all things always seemed the same."

CHAPTER III

THE GREEKS

IF we could put ourselves back in the year 500 B.C., and travel about in the countries near the Mediterranean which were then more or less civilized, we should probably find that the Egyptians and Assyrians seemed as strange and remote as their ancestors 2,000 years earlier, and that we had very little in common with the people we met with in Palestine or in Italy; but when we came to Greece we should begin to feel rather more at home. We should be astonished to find, right in the south of Europe, these tall fair-haired people so like ourselves, and so unlike their neighbours, in their appearance and outlook; people who hated tyrannies and lived in self-governing city states; who kept themselves free from the complications of Oriental theology, having a passion for truth and for seeing things as they really are; people, too, who were so extraordinarily keen about athletics and physical fitness—for, having like the Jews to hold their ground against the great tyrant-nations of Asia and all that they stood for, the Greeks were steadfast in their belief that a healthy and well-trained body is the best safeguard against unhealthy ideas. We should certainly want to know something about these people, and we should be all the more interested in them when we found that their immediate ancestors were Celts and came, like our own, from somewhere in the north of Europe. It was the mixing of this Celtic stock with that of the dark-skinned southerners that produced the Greeks, who in a few centuries of glory laid the foundations of almost everything that counts most in our life of to-day.

But when they first appeared on the scene these northern tribes came as destroyers, like the Northmen to whom we trace back our own descent. At that time, besides the civilization of Egypt, there was another, nearly as old, established in the Mediterranean countries. It flourished in Greece and elsewhere, but its chief centre seems to have been in Crete, so it is sometimes called the "Minoan" civilization, after Minos, a famous Cretan king. We knew very little about the Cretans until quite recently, when the remains of a wonderful palace at Knossos were excavated; but in many ways they seem to have been even more interesting than the Egyptians, because they were a keen and inventive people, which the Egyptians were not. They certainly had splendid opportunities, living on a large island which was fairly safe from attack in the days when people were chary of crossing the open sea except for purposes of trade, and for 2,000 years or more they seem to have been peaceful and prosperous, for they did not even fortify their buildings. They probably borrowed the idea of massive stone masonry from Egypt, as they also borrowed ideas of decoration, but they developed everything on their own lines, and instead of making things stiff and conventional they studied nature and produced the most realistic statuettes and paintings of animals, flowers, and other things. Nothing seems to have been too difficult for them, and they were particularly clever at representing vigorous action and motion, as is shown, for instance, by a famous group of flying fish carried out in coloured pottery with a beautiful glaze. Other pottery statuettes show us some of the fashions in dress, which are often astonishingly modern, proving that the Cretan ladies of about 2000 B.C. wore flounced skirts and corsets, with hats turned up on one side and trimmed with flowers!

Even more surprising was the discovery that about 4,000 years ago the Minoans had developed a system of drainage on modern lines. Knossos had a main sewer 3 feet high, of stone lined with cement, and stone and terra-cotta drain pipes socketed to fit one inside the other with a joint sufficiently elaborate to satisfy even a modern English sanitary inspector; and at Tiryns in Greece there are remains of an elaborate bath-room which not only had drains but also hot and cold water laid on. In fact, one writer on the subject remarks that the Minoan standard of cleanliness and sanitation was not reached again anywhere in Europe until the nineteenth century A.D.

The Minoans were in the stage of development called the "Bronze Age": that is to say, although they had given up using stone tools, they had only bronze tools and weapons and no iron or steel. This makes their fine masonry all the more wonderful. They used metal a great deal in decorating their buildings, not only covering wooden posts and beams with sheets of bronze or gold (as was being done at the same time in Mesopotamia), but decorating their stonework by fixing bronze ornaments to it.

Somewhere about 1400 B.C. all this Minoan civilization was swept away by Celtic invaders from the north—Achæans and others, who knew nothing of art and nothing of engineering or sanitation, but were tough fighters, and moreover were armed with weapons of iron—and Knossos with its palaces was overwhelmed by sudden ruin. The first remains of the Minoan period were found in Greece, at Mycenæ and Tiryns. It was talked of as the Mycenæan Age, and people assumed that it was the time described by Homer in his stories of the siege of Troy and the wanderings of Ulysses. But it now seems probable that Homer's poems date from about the tenth century B.C.; when, after

400 years "Dark Ages," a new civilization was gradually and painfully coming to birth. Compared with the splendid buildings of Knossos and Mycenæ the palaces of Priam, King of Troy, and Ulysses, King of Ithaca, with their wooden pillars and a dung-heap in front of the main door, are merely large farmhouses; and Homer's chieftains seem to have been very little more than country squires. But people still passed on traditions of the former magnificence, and the legends which clustered about the ruined palaces served to deck out fairy stories, like the descriptions in the *Odyssey* of the house of Alcinous with its bronze walls and silver doors and the magic gold and silver dogs "deathless and ageless for ever" which guarded the threshold.

The great age of Crete and Mycenæ had been a time of prosperity and magnificence. So have other ages in various countries. But the new Greek civilization which slowly grew out of the chaos of the barbarian invasions had something about it that puts it on a different level and sets it apart from the achievements of any other country in any other age; so that people have agreed ever since that Greek life and art at their highest (from about 450 to 350 B.C.) reached a level that has never been surpassed. Let us try to discover how this great reputation was gained.

Greece is a country about the size of Scotland. There are mountains all over it, which helped to split it up into a lot of different states all continually struggling for supremacy like the Saxon kingdoms of Wessex, Mercia, and Northumbria. The most important of these city states were Athens, Sparta, and Corinth. Corinth was the "Gay City" of Greece. It had a wonderful position, holding the isthmus which cuts the country in half, and it specialized in supplying pleasures of all sorts to the travellers, traders, and seamen who collected there from all over the world. "It's

not every one's luck to make a trip to Corinth" was a common proverb.

Sparta was the exact opposite, for the Spartans came of the pure stock of the northern invaders, and they were a stern hill people living under a rigid discipline. It was an extraordinary community, with a military organization which was more than Prussian and a system of "Social Conscription" rather on the lines advocated by some of the modern Bolshevik reformers of society; a joyless and inhuman system, under which family life was abolished and all natural feelings were repressed as signs of weakness. It certainly produced the results it aimed at—toughness, and efficiency in arms, and a stern devotion to duty—but Sparta did not contribute much to the advancement of art and culture.

The Athenians represented a mixture of the northern race with the older dark-haired, imaginative, and adventurous people of the Mediterranean coast; and the ingredients were mixed in exactly the right proportions for the production of miracles.

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About 1000 B.C. the Greeks were building temples of soft unburnt brick with timber posts to strengthen the walls. The temple itself was a small rectangular building with the roof extended over a veranda which ran all round and protected the walls from the rain. This veranda was supported by wooden posts arranged opposite the wooden uprights in the wall, with timber beams laid across from one post to the other. Sometimes there was a flat roof, consisting of a thick layer of clay spread on boards above the beams; but the "pitched" roof, with a low gable (or "pediment") at each end, gradually came into general use. With a sloping roof there was much more chance of

keeping the wet out, and this fashion may have been brought by the invaders from a more rainy part of the world. The whole temple was raised up on a plinth, like the Mesopotamian temples (which were also built of bad materials), with a flight of steps in front.

The first improvement was to replace the perishable wooden posts by stone columns, and this was probably done long before the next step was taken and the wooden beam-system [1] also turned into stone. And now the Greeks settled down to tackle their one great architectural problem, the discovery of the most satisfactory form, proportion, and decoration for these columns and their entablature. They kept this end steadily in view, and instead of turning aside to experiment with different types of plan and different methods of construction they were quite content to stick to their simple style of building and devote all their energies to reaching absolute perfection, by one experiment after another, along the particular line they had chosen. Their solution was the system of the Greek Orders [2]—Doric, Ionic, and Corinthian—which have become the regular language of architecture and are still used almost in their original form all over the world to this day.

But what do we mean by " the most satisfactory form and proportion " ? Columns obviously must be strong enough, and must *look* strong enough, to carry the weight of the beams which rest on them ; and they must be placed close enough together for the beams to span the distance comfortably. But that was not enough to satisfy the ancients. Their

[1] " Entablature " is the word applied to this beam-system. It does not refer to the roof timbers, but to the beams running along on the top of the outside columns (Fig. 3, p. 25).

[2] An " Order " is a column with its appropriate entablature—architrave, frieze, and cornice.

idea of proportion was that the parts of a building should be in some very definite relationship to each other. The building might, for example, be made 20 feet high, 40 feet broad, and 80 feet long: these measurements would be in a simple series of 2, 4, 8. And of the 20-foot height it might be decided that 3 parts (15 feet) should be column, and 1 part (5 feet) entablature.

This sort of system was used by the Egyptians, and at first the measurements had probably some religious or magical significance. But the Greek feeling for the rhythm of proportion was something uncanny, amounting almost to a sixth sense. We might call it "an eye for proportion," just as we talk of "an ear for music," which enables some of us to feel intensely the relationship of certain tones in a scale while others cannot distinguish one tune from another and say that they would not recognize the National Anthem unless people stood up! But even this is not all. Art to the Greeks was not merely a matter of æsthetic pleasure; it was something far more important, for to their mind it had a direct bearing on life and character. Greek buildings were "sermons in stone"; practical examples and reminders of the Greek rules of life and of conduct. Their special characteristics—logic, balance, and restraint, with the rhythm of proportionate parts running all through the design—were the qualities of the ideal Greek, who was thoroughly trained in body no less than mind and (armed with the favourite motto "Nothing to excess") governed himself by being able to view everything logically and in its proper proportion to the rest of life.

The Doric column is a good example of the logical form on which the Greeks insisted. Compare it with the Egyptian column on page 15, which has a bulging shape, some

parts being even wider than the base. In the Egyptian column there is a lot of material which is obviously doing nothing to carry the weight, and so by Greek standards should not be there at all. If we trim this away we get down to the form of the Doric shaft. The Doric capital shows

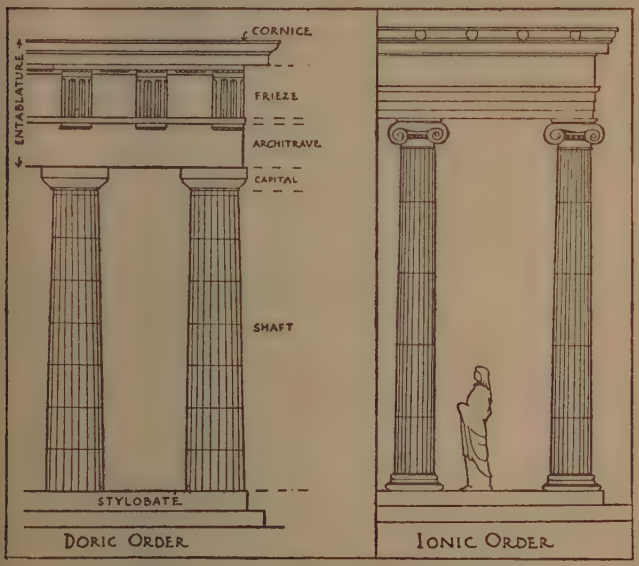

FIG. 3.—The two principal Greek Orders.

the simplest way of making the gradual transition from the top of the round post to the square pad (called the Abacus) which receives and distributes the weight of the lintel. The lines which once [1] were binding-cords have been kept to give emphasis to the point where the shaft stops and the capital is set upon it. Curiously enough, Greek Doric

[1] See page 14.

columns have no bases; probably because in early work they were set so close together that the extra spread of the bases would not have left enough room between them.

Below the broad projection of the cornice, the entablature logically divides itself into two parts (Fig. 3, p. 25); first the "architrave," corresponding to the wooden lintel which ran along above the columns, and then the "frieze," corresponding to the beams which ran on to this lintel and formed the ceiling of the veranda or "peristyle." The frieze is broken up by a series of narrow panels scored with three grooves and called "triglyphs," one panel over each column and one half-way between each pair of them. The triglyphs seem to represent the ends of the beams resting on the architrave, or the covering fixed on to them to protect the end grain of the wood (Fig. 4, p. 27). The square spaces left between them, called "metopes," are often carved. So far it is quite easy to see in these Doric features a petrified form of the original wood construction, but other details such as the odd little stone drops or pegs which hang down under the triglyphs, and which occur again under the cornice, have not yet been very satisfactorily explained.

The earliest Doric remains still standing are seven battered stone columns of a temple at Corinth, probably built about 650 B.C. The Doric shaft was always short and sturdy, but these are particularly squat, being only about half the usual height in proportion to their diameter. Just about the same time, the first Greek colonies were founded in Sicily and South Italy. The Greek cities there flourished exceedingly, and there is a fine series of early Doric temples still standing almost complete at Pæstum, Girgenti, and other places. There were also Greek colonies in Ionia, on the western coast of Asia Minor; and the Greek cities of Asia, such as Smyrna, Ephesus, and Miletus, were

famous for their buildings. It was by helping these cities in their struggle for independence that the Athenians made themselves unpopular with Darius the Persian. In 490 a vast army which he sent to take vengeance on Athens landed near Marathon. Athens was then a little town of some 30,000 inhabitants (about the size of Kettering), and found herself suddenly confronted by this huge force of the strange dark-faced men whom no one in Greece had seen, but whose very name carried terror before it. Pheidippides

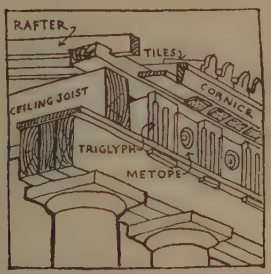

FIG. 4.—The suggested wooden origin of Doric features.

the runner carried her desperate call for help to Sparta, but by the time the Spartans arrived the battle was over. The seemingly impossible had happened : the Persians were in full retreat, leaving to the Athenians seven of their ships and the immortal glory of having, alone, saved Greece. Ten years later, however, Darius being dead, Xerxes collected an irresistible force, made a bridge of boats across the Dardanelles, and swept down through Macedonia. Athens had to be abandoned, and the Persians burnt the city and its temples. But again the situation was saved ; this time by the little squadron of Greek ships which won a crushing victory over the Persian Armada in the Bay of

Salamis, under the very eyes of the Great King as he sat throned in state "on a rocky brow" to watch the battle he was so confident of winning.

It was the rolling away of this cloud of terror, and the elation over these surprising victories, that ushered in the great days at Athens. The city had to be rebuilt, and Pericles, who was the chief magistrate, held that there was no better way of spending the public treasure than by making the public buildings as splendid as possible. "The wealth of a state," he said, "should be laid out on such works as when executed would be eternal monuments to its glory" and would also give employment to every class of worker and craftsman. "Every art would be exerted, every hand employed; almost the whole city would be in pay and be at the same time both adorned and supported by itself." The Athenians lived very simply and spent very little on their private buildings, but for the rest all the most precious materials were used, and in particular the glorious marble—creamy with a flush of gold—quarried near by on Mount Pentelicus. The city was crowned by the splendid group of buildings which stood on the Acropolis, a rocky platform rising sheer out of the plain on which Athens is set; and the gleaming temples were a landmark to sailors far out at sea. Travellers approaching the harbour at the Peiræus saw from afar the sunlight glinting on the golden spear of Pallas Athene the guardian goddess, whose statue stood high above the city and whose temple, the Parthenon, was the supreme building of Athens.

The most complete example of a Doric building now left in Greece is the Temple of Theseus (*see* Plate). The platform on which the old brick temples were raised is now only represented by a series of steps, called the "stylobate" or column-platform, running all round the

Greek Doric: Temple of Theseus, Athens

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four sides. Even now they show that they are not ordinary steps but a stepped base to the temple, for the height of each step is proportioned to the rest of the building, so that if the temple is a large one they become much too high to climb and small intermediate steps have to be put between the others. Notice, too, what a difference the gable or "pediment" makes to the appearance of the temple, as compared with the flat-topped buildings of Egypt and other countries further south. The Greeks made a great feature of the pediments at each end of the roof, filling them with groups of figures, not carved in relief but completely detached and standing clear of the wall behind. The triangular space was rather difficult to fill, because only the figures in the centre had sufficient head-room to stand upright. The artist usually got over the difficulty by using the corners for figures of people lying on the ground, and in battle-scenes the dead and wounded came in useful here; next to them came seated or crouching figures, and so he worked gradually to the centre. The photograph of the Temple of Theseus shows how the face of the pediment was set back to leave room for these figures.

The Greek masons used no mortar at all, and the joints between the blocks of stone or marble are absolutely tight. Except in very early work, the columns are not all in one piece, but are built up of drums about 3 feet high. The upper surface of each drum had a projecting metal dowel in the centre, and the next drum had a sinking which was dropped over this: then the masons, gripping the upper drum by projecting ears or handles which were left on the block for this purpose and cut off later, rotated it on the lower drum so that the marble faces were gradually ground down until one block lay absolutely true on the other —and there was even a special sinking provided to receive

the marble dust produced by grinding the two faces together. In the case of one or two unfinished buildings, columns have been found with the handles still left on the drums.

The design of a Greek temple looks, at first sight, very simple and straightforward. In reality it is full of unexpected subtleties, for the Greeks introduced all sorts of refinements in order to correct certain observed optical illusions by which most of us would probably never have been bothered at all. To begin with, there is the tendency of long horizontal lines to appear as if they sagged in the middle. To get over this, all such lines are made to rise gradually to the centre so that they are very slightly arched :

FIG. 5.—Exaggerated diagram of Greek refinements.

this applies not only to the lines of the entablature, but even to the upper edges of the steps in the stylobate (Fig. 5). The column, too, is not really straight-sided as it appears, but has a very slight bulge on each side, which gradually increases till it reaches its maximum (and at the Parthenon this is only three-quarters of an inch in 34 feet) at a point two-thirds of the way down. This bulge is called " entasis." It is so delicate that it is not really perceptible, and merely serves to prevent the opposite illusion ; when it is exaggerated, as one sometimes sees in modern work, it makes the column look bloated and shapeless. Then again, the columns appear to be all the same thickness and spaced at equal intervals : but this is not so. At the

corners of the building they are slightly thicker and spaced a little closer together, so as to avoid any feeling of weakness at this important point and because, being there seen against the light with the sky showing between them, they would otherwise have appeared to be thinner than the columns which are seen against the dark background of the temple wall. And the columns are not even upright: each one has its centre line slightly inclined towards the middle of the row. This is done to give an increased appearance of stability to the colonnade. A tower, we know, gives us an uncomfortable impression if it is built with its sides really vertical, for it looks as if they were falling outwards: so that we either build towers in diminishing stages or else put stepped buttresses at the corners to give an air of stability. But we should never think it necessary to take any special measures of this sort in the case of a row of columns, and this particular refinement helps us to realize how keenly the Greeks observed things and what an infinity of trouble they were prepared to take in order to get the exact effect they wanted. The number of tiresome adjustments and calculations needed to shape and bed, on a step which was not horizontal, the blocks of a column which not only diminished in width and had sides worked to an elaborate curve, but also leaned inwards and from front to back—and which, when completed, had to be fluted with about twenty sinkings all diminishing proportionately in their length—must have made first-class building work in Athens something like the Mikado's nightmare billiards "on a cloth untrue, with a twisted cue, and elliptical billiard-balls."

After the actual building had been made as perfect as was humanly possible, the Greeks proceeded to enrich it with sculpture. But this sculpture was not merely applied

ornamentation; every piece of it was carefully designed in consideration of the particular place in the whole scheme which it had to fill. The sculptures from the Parthenon which are now in the British Museum (and are called the Elgin Marbles) are a good example. The series of fighting heroes and Centaurs which decorated the metope-spaces along the entablature is in such high relief that the figures are only just attached to the surface of the block. For like the free-standing groups in the pediment they were seen in dazzling light, and unless they had been very strongly modelled the forms would have been lost in the general glare. But high on the outer wall of the temple itself, in the shadow of the peristyle or veranda, there ran the long "Panathenaic Frieze," showing the procession of the annual festival of Athene, and this—being seen in subdued and reflected light—is carved in low relief. It is probably the finest example of Greek sculpture left to us, and this procession, so full of glorious life and health and the timeless beauty of the perfect human form, is a strange contrast to the Assyrian frieze of Assur-banipal's lion-hunt,[1] carved only two centuries earlier, which now seems to be merely a wonderful diagram of something very old and foreign, with no deeper meaning and no message for us about life in general.

The Parthenon was finished in 438 B.C. It was the most famous temple of the Greek world, and after 2,000 years it still ranks as the most perfect building of all times. Right up to the end of the seventeenth century it remained fairly complete, although the interior had been altered, being converted at various times into a church, a mosque, a residence for a Turkish Pasha, and finally—during the war between the Turks and Venice in 1687—a powder magazine. If it

[1] See page 6: also in the British Museum.

had not been for this last use, it might still be standing as complete as the Temple of Theseus; but an unlucky shot by one Schwartz, gunner on a Venetian ship, dropped a bomb right into the magazine, and the explosion of the powder blew out all the middle of the building.

Yet even if one of the temples of the time of Pericles had survived to our own day, undamaged and with its sculptures all in position, we should still have very little idea of what it looked like in its prime; for originally all these Greek buildings were brilliantly coloured, and many of the plain surfaces, such as the curve of the Doric capital, were enriched with painted decoration in strong and clear tones of red, blue, green, or yellow, with a good deal of gilding. We are so accustomed to admire the natural colour of the marble itself that it is rather a shock to think of its having been painted. But things look very different in the strong light of the south, and from what we know of the Greeks and their standards of taste we can feel fairly confident that whatever they did in this way was justified by the result; for they appreciated the importance of restraint and refinement too much to spoil the general effect at the last moment by anything lurid or vulgar. Besides being coloured, their marble buildings were also enriched with decorations in gold and bronze, a fashion which had survived from Mycenæan times. In the Parthenon frieze the reins and the horses' bits were of metal, as we can see from the holes in the marble where they were fixed. Some of the temples probably had bronze shields and garlands hung along the walls.

So far we have only considered the Doric, which was the earliest of the three orders invented by the Greeks, and the one in which they did their finest work. Next in importance comes the Ionic (Fig. 3, p. 25), developed somewhere about

the sixth century in the Greek colonies of Asia Minor. The spiral at each end of the capital is technically called a "volute" (or turn), and though all sorts of ingenious explanations of it have been suggested—rams' horns, shells, and so on—they are not really needed at all. For the spiral is a common natural form and was commonly used in the design of ornamental patterns by the Cretans and Mycenæans; it also occurs in Egyptian, Persian, and Assyrian work.

The really important thing to notice about the Ionic capital is that it is a "bracket-capital," like some of the Persian forms. If we think of the capital as being originally

Fig. 6.—Early Ionic capital (wood).

a block laid on top of a post or shaft, the Ionic form appears as an experiment in the use of an oblong block instead of a square one—the extra length giving additional support to the beam above. One very early Ionic cap found at Athens is not much more than an oblong block with the ends rounded and spirals carved on the flat face (Fig. 6). It was not at all easy to advance from this stage and to design a satisfactory connection between the oblong part decorated with volutes and the round top of the column. This is one of the problems of the Ionic Order which has exercised architects ever since, and very few of the solutions are really satisfying. The other difficulty is that an oblong capital has two ends as well as two faces, so that in a colon-

nade running right round a building you get into trouble over the corner capital, which by rights ought to face both ways. The Ionic Order is lighter and more slender in proportion than the Doric, with something of a feminine

FIG. 7.—The contrast between Greek and Roman Corinthian capitals.

grace in contrast to the Doric ruggedness and strength. It is certainly one of the most beautiful forms invented by the Greeks, and is still used a great deal in modern work.

The Corinthian Order (Fig. 7) only appears about 430 B.C. We need not look very far for the original of this

capital (which is a useful shape and the same on both sides), for the type of bell capital with little leaves round the bottom and volutes above was a common one in Asia, and was used in Egypt in quite early times. It was apparently first used by the Greeks for the richly-decorated single columns set up in temples or public places as votive offerings, and there may well be something in the theory that it was called Corinthian because of a famous early capital decorated with foliage in Corinthian bronze and designed by Callimachus, who also made the golden lamps for the Parthenon and "the bronze palm tree hanging over the lamps and reaching to the roof." The Greeks never seem to have used the Corinthian as the main order of a large building.[1] Ictinus, the architect of the Parthenon, built a temple at Bassae which had a single Corinthian column standing in a special place in the sanctuary, where it formed part of an Ionic colonnade, and this order seems to have been used only for monuments and other small buildings, always rather as decoration or for special effect and never quite ranking with the other two. But the Romans loved it and we shall find that in Roman work it is almost the only one of the Orders which counts. As a result, the Roman Corinthian capital is the model to which we can trace back nearly all the Byzantine, Romanesque, and Gothic capitals and so it forms a connecting link between the medieval masons, Callimachus of Athens, and the swarthy craftsman at Thebes who carved the papyrus leaves round the bell of his capital in the days when Israel was in bondage to the Egyptians.

Besides the temples, we find in Greece and Sicily remains of tombs, of open-air theatres cut out of the hill-sides, and

[1] The Corinthian temple of Jupiter Olympius at Athens was designed by a Roman in 174 B.C.

of some elaborate gymnasiums. The arrangement of all these buildings shows the inventiveness and originality of the Greeks, who laid down in them the lines on which people have worked ever since. Their methods of construction are just as full of interest. They were the first people to frame woodwork into panels, for doors and so on ; they used solid iron girders to distribute the weight of beams on marble lintels, and iron bars to reinforce the blocks of stone foundations. In the pediment of the Parthenon the heavy statues were supported on iron cantilever-brackets built into the back wall, so that the weight might not come upon the projecting cornice below.

The great period of Greek art was a very short one—more than covered by two centuries, from 500 to 300 B.C. After that, Greek freedom was continually overshadowed by the growing power of Rome, and the Greek stock seems to have lost its vigour. But that short time of splendour has inspired the thought and the civilization of Europe ever since. We might claim the Greeks as the first Europeans, for we still use the forms they perfected and cast our thoughts and our words into the mould which they fashioned for us. We could have no better reminder of this than the speech which, twenty-three hundred years ago, Pericles delivered in honour of the Athenians who fell in action in the Peloponnesian War :

> " But each one, man by man, has won imperishable praise, each has gained a glorious grave—not that sepulchre of earth wherein they lie, but the living tomb of everlasting remembrance wherein their glory is enshrined, remembrance that will live on the lips, that will blossom in the deeds of their countrymen the world over. For the whole world is the sepulchre of heroes : monuments may rise, and tablets be set up to them in their own land, but on far-off shores there is an

abiding memorial that no pen or chisel has traced ; it is graven not on stone or brass, but in the living heart of humanity. Take these men for your example. Like them remember that prosperity can only be for the free, that freedom is the sure possession of those alone who have courage to defend it."

CHAPTER IV

ROME

IT is reported that an American gentleman once summed things up by saying that "Rome was the big noise in ancient history." It was a fairly apt remark, for none of the empires of the past made such an impression at the time or left such a great name behind it. And although our modern culture owes its inspiration to Greece, it was the Romans who brought us into touch with Greek thought, which might otherwise never have reached us. Greece was the clear mountain spring, but Rome served as the irrigation system distributing its waters far and wide; and if they lost something of their crystal purity in the process and acquired a slight taste of the pipes, yet the work of distribution was none the less valuable and essential. Our debt to Rome on the practical side of our life is quite as big as our debt to Greece on the intellectual side.

We are in the habit of talking about "the Greeks and Romans" rather in the same way that we might talk about the Angles and Saxons, and of picturing them vaguely as one group of people representing the same type of ideas, with the same general background of marble temples, statues on pedestals, and men standing about in flowing robes making pompous speeches. But this is really as absurd as if we were to talk about "the Israelites and Egyptians," and if we want to get any proper picture of the Romans we must realize from the start how very different they were from the Greeks by nature, and in all their ways and works.

The Romans were very definite about the date on which their city was founded: it was the 21st of April 753 B.C.

Rome began as a stockaded hill-top settlement beside a ford on the river Tiber. In those days the chief people in central Italy were the Etruscans, a mysterious race who developed a rude civilization of their own and whose buildings were roughly on the lines of early Greek work; and for some time Rome was actually governed by Etruscan kings, the last of them being "proud Tarquin" who was expelled in 510 B.C. when the republic began. So far as building was concerned we must still think of it as an Etruscan city down to the second century B.C. These Etruscans built their city walls with enormous blocks of squared stone, as the Mycenæans had done, and the same sort of rugged masonry reminds us of them whenever we come across a Roman wall, whether it is in Africa or in Northumberland. Their temples were something like the Greek temples in general shape. They were built of wood; low and broad, with stumpy columns and a heavy entablature above, and elaborately decorated with terra-cotta ornamentation. Sometimes they had groups of terra-cotta figures on the pediments. Unfortunately there is not a trace of them left except some of the terra-cotta trimmings, but we have found a great many tombs, containing bronze shields, vases, mirrors, weapons, and so on. These tombs are often round, with pyramid roofs, and the Romans' fondness for circular buildings—of which the Pantheon, the "Temple of Vesta" and the Castle of St. Angelo are famous examples—was probably a relic of Etruscan influence. Even after they had got rid of Tarquin, the Romans had to be continually fighting the Etruscans and had very little elbow-room, though they managed to secure an outlet to the sea at Ostia, 14 miles away. Then about 430 B.C. came an invasion of Gauls from the north, who overran Etruria. Rome herself also suffered invasion, and the city was sacked;

but she soon recovered. The Etruscans did not; and they gave her no more trouble. But it was not until 266 B.C. (70 years after Alexander the Great, and 170 after Pericles and the great days of Athens) that Rome completed the conquest of Italy and began to come into contact with the world outside.

Her affairs now brought her into touch with Greece, which finally became a Roman province in 146 B.C. As they went campaigning among the Greek cities, and saw them still in their full splendour of temples, theatres, and colonnades, all adorned with statues and paintings, the Romans probably realized for the first time that they were barbarians, and that their mean little town with its few clumsy temples and dingy terra-cotta decorations was a poor place to be the capital of a people who were becoming as important in the world as they were. Perhaps it was their natural annoyance at this discovery, as well as their desire to terrify other Greek cities, that made them wipe Corinth off the map. We can only be thankful that they did not choose Athens; for the Romans, then as always, were easily moved to a mood of stupid brutality, and in that very same year the great African city of Carthage, which lay at their mercy, defeated and helpless after a hundred years of war, was stamped out of existence and its very site ploughed over.

Once their interest was aroused, the Romans developed a passion for everything Greek, and every one who wanted to be fashionable set himself to collect statues and paintings from the Greek cities. Rome itself became more imposing, with buildings in the Greek style; but the first emperors afterwards rebuilt it so thoroughly that of all the buildings of the city there are now only about two which date back to B.C. times. The Rome which we know about, with its temples, forums, and arches of triumph, is the Rome of the

Empire (which began about the time of the birth of Christ). In fact Rome was more than 700 years old before she began to make architectural history. By that time she had extended her power in Asia and Africa, as well as in the wild countries of Spain, Britain, Germany, and Gaul: and the riches and treasures of the older civilizations were poured into Italy in such profusion that Rome in the days of the Emperors was probably more wealthy and magnificent than any city that the world has ever seen, before or since. Cæsar Augustus, the first emperor, said that he found a city of brick and left it marble, and we get some idea of the sudden growth of wealth and luxury from the descriptions of a palace called "the Golden House" which was built for Nero only about fifty years later. The portico is said to have contained a colossal statue of the emperor, 120 feet high (almost the size of the statue of Liberty in New York harbour), and there was a triple colonnade a mile long. "Parts of the palace were entirely overlaid with gold, encrusted with jewels and pearls. The supper-rooms were vaulted, and the compartments of the ceiling, which was inlaid with ivory, were made to revolve and scatter flowers. They also contained pipes to shed scent upon the guests. The ceiling of the chief banqueting-room was decorated to represent the sky and its constellations, and was made to revolve perpetually by means of some form of machinery. The whole place evidently represented the very last word in magnificence, and when it was finished Nero took possession with the modest comment, "Now at last I have begun to live like a gentleman."

It is quite obvious that the pure Greek style, developed in temples which were always fairly small and very simple in plan, would need a good deal of alteration before it could be used for a building of this sort. And there were, besides,

various special reasons which brought about modifications and changes in it. The ordinary Roman temple was more like a Greek temple than anything else, but as it usually stood in a crowded street there was often no room for the "stylobate" of steps running all round it; so the Romans kept to the older Etruscan fashion of setting the temple on a high base with a broad flight of steps in front. We in our turn have borrowed this fashion from the Romans, and it is the regular arrangement that we see nowadays in all modern Classical buildings. An even more drastic saving of space was made by doing away with the colonnades running along the sides of the temple. The columns were moved back until they became actually attached to the side walls, and then of course they had no work to do and served merely as decoration, for the entablature might just as well have been carried by a plain wall. This was an important step in the history of the Orders, and we shall see later what surprising results it has led to. It was the first step in the practice of using columns and entablature merely as ornament, stuck on to buildings where the real work was done by something else—a bad habit from which, nowadays, we suffer very much. The only columns which stood free were the columns of the portico in front, and this portico (again following an Etruscan fashion) was made deeper than in Greek work, sometimes having three or four rows of columns (Fig. 8, p. 44).

The Romans, like the Greeks, built their temples more for show than for use. In Greece the general public probably never went inside the temple at all, being content with an impressive glimpse, through the doorway, of the statue of the god throned at the far end. The back part of the building was regularly used as a savings bank and strong-room for the public funds. The Romans were on the whole

even less religious than the Greeks, and their temples were chiefly used as museums and filled with the statues and treasures stolen from Greece and other countries. The temple at Nîmes in the south of France, now called the Maison Carrée (Fig. 8), is the most complete Roman temple left to us. It is an example of what we might call the "standard pattern."

Of all the Greek Orders—Doric, Ionic, and Corinthian,

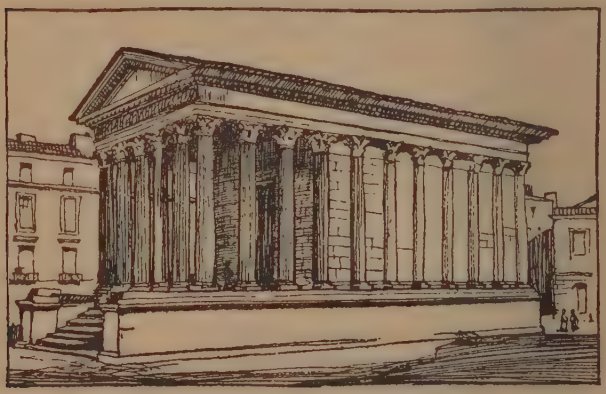


FIG. 8.—Roman temple at Nîmes.

the Romans preferred the Corinthian. The Greeks had used this order very little, and when the Romans adopted it the capital was still in an experimental stage. The Romans went on developing it and produced a useful form (Fig. 7, p. 35), which we still employ to-day without much change. The contrast between its robust ornateness and the delicate refinement of the original form is typical of the gulf between Greek and Roman work.

Roman buildings were often so high that, instead of having one huge order proportioned to the whole height,

they were divided into stages, and each stage had a different order. This was an entirely new arrangement, though nowadays we are quite familiar with it, and it is rather interesting to notice that the orders always occur in a regular sequence—Doric below, then Ionic, then Corinthian. Even to-day we should never think of upsetting this arrangement, for just as we sometimes make the stonework more rugged in the lower part of a building so that it seems to form a strong base to support what comes above, so we feel instinctively that the plainness of the Doric column makes it the most suitable one to shoulder the heaviest weight, and the Corinthian with its elaborate decoration seems to come naturally at the top, where the work is lightest.

The Roman Doric column is not much like the Greek form: it has acquired a base to make it more in keeping with the other orders, and the shaft is straighter and more like the others in shape. The capital is so entirely different from the Greek Doric capital with its subtle curves that instead of calling it a corruption of the Greek form one is inclined to think of it as a survival of the Etruscan capital and only a first cousin of the Greek—both of them deriving from the old Mycenæan cap (Fig. 9, p. 46).

The Doric columns that we see in modern work are almost invariably of the Roman type, for the Italians of the Renaissance who revived the Classic styles for us knew nothing about Greece and only studied Roman buildings. Periodically we have had Greek revivals—one of which produced the huge Greek Doric gateway to Euston station in London—but it is the Roman Doric column that we see supporting the porch of almost every town house and the roof of almost every formal veranda and tea-pavilion. There is no subtlety about this capital, but it is a thoroughly practical one—the curve being just a quarter of a circle,

which anyone can set out with a pair of compasses. This is the sort of consideration which appealed to the Romans, for they never pretended to be interested in architectural

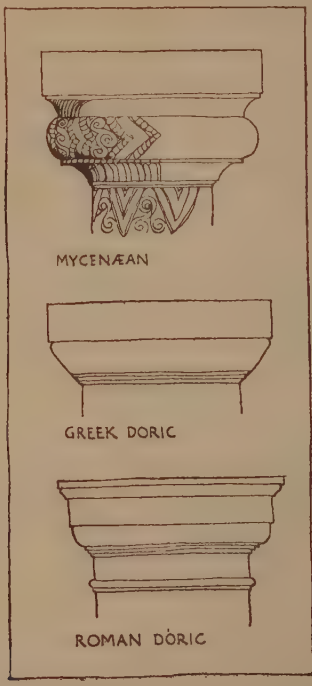


FIG. 9.—Mycenæan and Doric capitals.

refinements. What they did appreciate was enrichment and decoration. They had conquered most of the world and had become immensely wealthy, and like successful profiteers in all ages they liked their surroundings to look expensive.

The feature in Roman work which was to have the most important effect on what came after, was their use of arches. People seem to have known about the arch from the very earliest times, but its dangerous habit of thrusting sideways [1] probably made the early builders rather afraid of it, so even the Greeks and Egyptians only used it for vaulting tunnels or underground rooms. But the Etruscans, probably because they could not get long stones for lintels, used it more, and the Romans followed their example. In what we might now call engineering—bridges, aqueducts and so on—the arches were allowed to show themselves frankly and to do their proper work; but for anything else the Greek system of column and entablature was considered the only decent arrangement, and at first the arch had to establish itself somehow inside this system. So we see, as a compromise, an arched building like the Theatre of Marcellus (built about 20 B.C.) with a column-and-entablature pattern stuck over it, one arch appearing between each pair of columns (Fig. 10, p. 48). So thoroughly had the Greeks done their work that the difference between "building" and "architecture" really seemed to consist in the presence or absence of an order of columns and entablature. Arches used in this way became very common in Rome, and even in distant parts of the empire the streets were adorned with triumphal arches and gateways. In big modern cities like London and Paris we can see one or two triumphal arches in the Roman style, and it helps us to realize what the streets of Rome must have been like when we hear that eighty years ago at Lambessa, a Roman town in North Africa, there were forty arches of this kind still standing.

The arch, then, had successfully established itself as an

[1] See page 101.

architectural feature, springing off a little abacus laid on a piece of wall on each side of a column ; but before the way could be open for the proper development of arched architecture that arch had somehow to get up on to the column itself and break through the entablature. We cannot quite say how this came about, but at any rate by the time that Diocletian (A.D. 306) built his seaside palace at Spalato in Dalmatia, the intermediate stages had all been passed, and

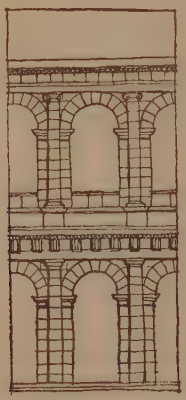


FIG. 10.—Arches in subjection.

we find an arcade of free-standing columns with arches springing directly from them just as they might in a Norman church. The age-long tradition of post and lintel as the only scheme of design has at last been broken, and although we are still a long way from the high vault of Beauvais, we have made a real start along the road. The next step is the development of vaulting, and from this we go straight on without a break to the Byzantine style, which the Romans developed after Constantine had moved the seat of govern-

ment from Rome to Byzantium (now called, after his name, Constantinople). Before we start to consider this change, let us have another glance at the Romans themselves and their surroundings.

We have already hinted that they were not by nature a very artistic race. Some people go further, and call them a nation of Philistines. At any rate, if Beauty and Freedom and the Development of Character made up the religion of the Greeks, Power and Justice and the glory of the great mother-city might be taken as the religion of the Romans. Deep down at heart they cherished the tradition of the old republican days when life was stern and simple, commemorating the homely virtues of men like Cincinnatus, who left his farm to become Dictator and, having saved the State, laid aside his honours and went back to his ploughing. In the early days of the Empire, at any rate, they looked on artistic pursuits with a certain amount of contempt, as being not quite in their line, and contentedly paid foreigners to provide them with statues and music and to adorn their buildings. "Others," says Vergil in his great patriotic poem, the *Æneid*, "will mould the bronze more delicately, and from the marble will lure features instinct with life; others will plead with more power in the law courts or map the risings and the courses of the stars in the heavens. It is your task, Roman, to rule the nations. For you the Arts will be these—to enforce the custom of peace, to show mercy to the vanquished, and to overthrow the rebel with the sword."

It was a fine ideal that the Roman put before himself: to carry the name and power of Rome into distant lands, each advance being followed up by a further length of hard paved road running straight and unswerving through African deserts or German forests, linking the farthest outpost to

the heart of the great organization, and carrying Roman peace and Roman justice to the savage peoples at the farthest limits of the empire. It is the tokens of this work which make us feel Rome's greatness more vividly than anything else—the broken arch of a bridge across some gully in Algeria or the long line of the Wall running across the Northumberland moors. Wherever the Romans went, they built cities after the Roman fashion. The stone-paved streets ran straight from gate to gate and often had colonnades along their whole length. At special points they were spanned by triumphal arches, and at others they widened into market squares surrounded by porticoes where the people could stand about and do their business. Temples, baths, theatres, and all the various other public buildings, were set out in positions where they would create the most impressive effect. The Romans' love for order shows itself in their towns, just as it does in the plan of every Roman encampment; in the straight lines of the streets with their rectangular crossings, the long vistas, and the careful placing of the chief buildings.

In Europe most of these towns have been inhabited continuously, so that all traces of the Romans are often buried far below the present street level; but in Africa and in Syria the dry air and the sand have preserved the skeletons of many Roman towns which died when the Empire was over-run and have lain deserted ever since. At Palmyra, out in the desert beyond Damascus, we can see the Roman streets with their colonnades, and at Timgad in Algeria the whole carcase of the city is left, like another Pompeii, with the shells of the houses, the stone paving and curbs of the streets, a theatre, stalls in the market with their stone counters in position, a triumphal arch built by Trajan, and hundreds of columns still standing.

The Romans' work as pioneers and empire-builders naturally appeals to us, for it is so like the work that our own people are doing all over the world—"shouldering the white man's burden" as we call it. But in the case of the Roman Empire it was government for the sake of the governors and not for the sake of the people they governed. The people had no share in it, for there was nothing in the way of a parliament or representative assembly, and there was no idea of gradually fitting them for governing themselves. Rome was prepared to give them laws and roads and circus-shows and the other advantages of civilization, and to defend them from their enemies; and all they were expected or allowed to do in return was to behave quietly and pay their taxes. The Emperors spent enormous sums on keeping the citizens of the big towns amused and contented. There was probably never a time when the public got so much for nothing—doles of food and money, luxurious public baths, theatres, and exciting spectacles of every kind. The Flavian Amphitheatre—which is called by its nickname "the Colosseum"—shows us the enormous scale of the Roman theatres, for it held 50,000 or 60,000 people and its outside wall (127 feet high) is half as high again as the main block of St. Paul's Cathedral. Even in these days of huge buildings it still seems colossal, and if we can faintly picture the impression it must have made on the strangers who flocked to Rome in the days of the Empire, it will help us to understand the sense of awe which clung around the name of Rome even when her power was gone and the city lay at the mercy of one lot of barbarians after another.

As for the Roman baths, there is no modern building or institution that we can compare with them. They were really clubs, but however much one might be willing to

pay in entrance fees and subscriptions one could never find, nowadays, a club that offered anything like the range of occupations, or was so luxurious in its decoration and appointments, as these clubs which every Roman could use at a charge of about a farthing a time. To form a picture of the largest, such as the Baths of Caracalla, we must imagine an enclosed park containing formal gardens and colonnades, tennis-courts, a running track, an open-air theatre, and accommodation for all sorts of games and gymnastic exercises, with dressing-rooms for the athletes. In the centre stood the main Club-house—a Turkish Bath block as large as the Houses of Parliament, with a series of enormous vaulted halls opening one from another to provide the vistas which the Romans loved. The walls and floors were covered with coloured marble, the ceilings decorated with paintings, mosaics, or gilded bronze; and there was continual variety and interest in the shapes of the rooms and their arrangement, semicircular alcoves, niches with statues standing in them, bronze screens and grilles, and other furniture of all sorts. "We have come to such a pitch of luxury," says one writer of the time, "that we are not satisfied unless we tread on jewels in our baths." Besides the main rooms there were suites of private baths, dressing-rooms and massage-rooms, shops, lecture theatres, and colonnades where the news of the day was read out, where authors read aloud their stories and poems, and where people who had nothing better to do could spend the whole day lounging and exchanging gossip. There were about eight hundred smaller establishments in Rome for purposes of bathing only, and every private house of moderate size in the town or in the country had its own suite of Turkish Baths.

All this meant that the consumption of water in Rome was

something enormous, even as compared with modern times, and of all the buildings of the Romans none is finer than the aqueducts which supplied their cities. Here we have really great architecture, and it is great just because the Romans never thought of it as architecture at all; for if they had, they would have felt it necessary to stick on columns and mouldings and the usual architectural trimmings. As it is, the great arches stride across valleys and plains with the grand effect of absolute simplicity and fitness for their work.

There were eleven aqueducts supplying the city, and three of them are still in use to-day. The earliest of all was built as far back as 300 B.C. One of them, built in 146 B.C., was 58 miles long. We know of two hundred aqueducts in various parts of the empire, and as the Romans knew that water will always rise to the level of its source, we may wonder why they built these enormous structures to carry it high in the air instead of running it in pipes. The explanation probably lies in the difficulty and expense of casting large metal pipes strong enough to resist the pressure of water running downhill.

The second century A.D. has been called the happiest century in the history of the western world; and the life and ideas of an educated Roman in the days of the Empire seem in many ways strangely like our own. This is true even of the first century A.D., when an eruption of Vesuvius cut short the life of Pompeii—a little seaside town of rather a second-rate type, near Naples—covering up the remains so safely that although the survivors burrowed down and removed most of the gold and other valuables, the traces of the every-day life of the town have been wonderfully preserved. Such things as the election-posters on the walls, and advertisements like "Scaurus's Blossom Brand

Tunny-fish Jelly, bottled by Eutyches " have a very modern ring about them.

Among those who perished in this catastrophe was the well-known writer Pliny, who had gone there on board ship to try and rescue some friends of his living in the danger zone. He was the author of a book on Natural History (for the writing of which he had consulted 2,000 volumes !), and his nephew, " Pliny the Younger," left a delightful series of letters which give us our best picture of a Roman gentleman of about 100 A.D. In one letter he describes his country-house on the sea coast.[1] " My place," he says, " is designed for use—not expensive upkeep. In front, an entrance hall, modest but not mean, then a colonnade in a D-shape, enclosing a jolly little garden-court . . . a splendid place in bad weather, sheltered by window-panes and projecting eaves. Central with this is a delightful inner court, then rather a pleasant dining-room jutting on to the shore, and washed by the spray of the highest waves when there's an African blowing. On every side are doors, or windows as big, so that in front and at the sides it has a view of three seas, you may say ; and at the back, inner court, colonnade, garden court, colonnade again, entrance-hall, the woods, and the far hills.[2] A little set back on the left is a roomy bedroom, then a smaller one with one window to let in the dawn, another to hold the sunset, and with a view of the sea beyond. . . . The corner made by this bedroom and the projection of the dining-room is a sun-trap, the winter-garden and the play-ground of the household." Then he

[1] I have drawn largely on a translation by Mr. W. G. Newton, F.R.I.B.A., to whom I am indebted for his consent —A. L. N. R.

[2] Even in Italy, this arrangement of rooms and open courts, with its delightful vistas right through, must have been on occasion very chilly.

describes the cold bath, the massage-room, heating chamber and hot room, " and next door, a wonderful warm bath where you can swim with a view of the sea." Near by was a racquet-court, a tower and a supper-room with a wide view of the sea, a terrace bordered with box and rosemary, and a breakfast-room. " At the head of the alley lies the garden-house, the joy of my heart. It was my own idea. It contains a sun-chamber looking one way on the alley and one on the sea," next it a bedroom, with " a jolly recess which can be made part of the bedroom or cut off from it by glass doors and curtains. It holds a bed and two chairs, sea in front, villas at back, woods at head . . . a window for each view or for all at once " ; and the bedroom is " cut off from any noise of servants talking or murmur of the sea. Well now," he concludes, " do you think I'm right to love my country home ? You must be a confirmed man about town it you don't envy it. Yes, do envy it ! So that, richly dowered as it is, my little place may have the added commendation (the greatest of all), of entertaining you."

Pliny was not an enormously rich man, but the account of his charities is typical of the generosity—a real civic enthusiasm—with which the Romans gave or bequeathed money for public purposes. He gave a library to the town of Como, and permanently endowed it ; built public baths ; endowed a fund in aid of poor children, and offered to contribute one-third of the cost of a secondary school on condition that the citizens gave the rest—so that they might feel a personal interest in it and take proper care to appoint suitable teachers.

But to all this pleasant picture of Roman enlightenment there is a dark side—a strain of primitive savagery and brutality which runs all through Roman history. No really

civilized nation could have tolerated the horrors of the public shows in which men fought for their lives to amuse the crowd ; the spectators' vote whether the loser should be spared or killed in cold blood where he lay, before the eyes of his friends or kin ; the slaves who came into the arena with iron hooks to drag away the bodies of the dying and the dead ; wild beasts let loose to be butchered ; men and women given to be torn by the beasts. These things are signs of the general Roman failings—lack of taste (which is a sense of fitness) and lack of imagination. They make us feel that the Romans were naturally a people of dull mentality, and when we examine their record we find that they produced very little art or literature of their own which can be put in the first rank, being for the most part content to copy Greek models or to employ foreigners to produce works of art for them.

In every phase of life the Romans were too ready to get their work done by others. Fed by its slaves and defended by foreign mercenaries, the Roman stock gradually lost its vigour, till at last Rome could no longer even direct the affairs of the Empire and the slaves and mercenaries assumed control. So it was that the pleasant ordered life of Rome, so splendid and apparently so firmly established, was gradually undermined and at last swept away.

CHAPTER V

THE NEW ROME AND BYZANTINE ART

WE have seen how the Romans adapted the Greek system of architecture to all sorts of large buildings, and how the arch, which had hitherto been neglected, began to take its place in that system. But for a long time after this the design was still ruled by the strong horizontal lines of the entablature, and it is only when we come to vaulted buildings that we find the spell of these horizontal lines being broken and the arch asserting itself as the real key-note of the design. In Egypt and Mesopotamia the builders were governed by the length of the stones they could quarry or the trees they could cut to provide beams for their roofs ; so when they built a really large hall it had to be full of columns to support the ends of these beams. The Greeks worked on a small scale and did not often come up against the problem of covering a big space. We do hear of one temple in Sicily which was so wide that it could never be roofed and had to be left open to the sky, but the worshippers apparently did not mind much, taking a philosophic pleasure in the " precious groves of laurel bushes which grew inside as well as outside the temple " !

The Romans, however, if they were not great artists were at any rate great builders and engineers, and by experimenting with a new material they evolved a method of roofing very large spaces. Their huge halls, such as those in the baths, were covered with vaults of concrete sweeping across a span of 80 feet or more, and in the Basilica of Constantine they managed to roof a room 265 feet long

by 83 broad without a single column to break up the floor space. Nothing like this had ever been done before: it was quite a new achievement in human building. Now at last, we might think, we have got away from the post-and-lintel system, and the arch has come into its own. But not a bit! These concrete vaults are nothing but a very highly developed form of post-and-lintel building. As the concrete sets into one solid mass, the vault becomes a huge curved lintel bridging the span from wall to wall, with no more sideways thrust than there would be if you were to cut a piece of wood into the shape of an arch and lay it across from one post to another. But cut this arched lintel into pieces and build the pieces into a real arch, and you will see the difference: your former lintel, with its dead weight pressing directly down on the supports, has become a living force striving to push them apart.[1] A concrete vault had no need of buttresses, for there was no sideways thrust for them to lean against; but it wanted very thick walls to bear the weight. The walls of the Pantheon are of solid concrete 20 feet thick. If this is compared with the length of a fair-sized sitting-room it gives some idea of the amount of material and labour which the Romans used in their building.

With concrete walls and a concrete vault, the whole structure became one mass just in the same way that a china model of a house is all one mass, and there was no need for columns as supports. But "architecture" still meant columns and entablature—as it does to some people even to-day—so columns were stuck about in front of the concrete walls as though they really supported the vault. These columns even had a slice of entablature put on top of them, which was the worst absurdity of all—for if we are to pretend

[1] See page 101.

Imperial Rome : a Hall in the Baths of Caracalla (restoration)

that the columns are carrying the vault, then the vault itself becomes their " entablature."

If we built vaults of this size and this sort to-day they would probably fall in on us : but we have found a way of giving the concrete great cohesion or " tensile strength " by reinforcing it with rods of steel as described on page 224. The Romans knew nothing about this, but their concrete had the most surprising strength and cohesion, as we see in the ruins of some of their buildings where parts of the vault now appear to hang in the air almost without support. The secret lies in the wonderful cement which binds the stones of the concrete together. It was made with a special volcanic earth called Pozzolana (from Pozzuoli, near Naples, where it was dug) ; and it was only where they could get this earth that the Romans could build their enormous vaults successfully. There are no signs of them in the Roman towns outside Italy, though there are smaller vaults in stone and brick. If there were concrete vaults in these places they seem to have all fallen in.

This late Roman architecture of the palaces and baths and other big town buildings, with its huge expanses of wall and ceiling, gave great scope for decoration, and the interest gradually shifts more and more from the outside to the inside. The outside walls were often faced with plain brick, sometimes cased with marble slabs and sometimes covered with stucco painted to look like marble, but the interiors were far more magnificent and glowed with rich colour from the marble linings below, paintings and mosaics above, and vaulted ceilings decorated with mosaic or gilded plaster-work. Marble mosaic was used for the floors, and floors of this sort with elaborate patterns worked out in little cubes of various colours are quite often found on the sites of Roman buildings in England. But when we

talk about mosaic we generally mean the glass mosaic, composed of cubes of glass in gold and rich colours, which was used for decorating walls and swept up into the curves of vaults and domes. There was no other form of decoration which produced such a rich and splendid effect, and it was specially suited to these curved surfaces where the gold, which often formed the background to a design of figures or scrollwork, was continually catching the light at different angles. Each cube measured about half-an-inch square, and each one was set separately, so that the decoration with mosaic of a large building such as Santa Sophia, with its dome of 107 feet diameter, was a formidable task.

And now it is time to consider how the Roman style developed into its later "Byzantine" phase; and this brings us to an important person called Constantine, who was emperor soon after A.D. 300. He was the son of St. Helena, who is supposed to have found the True Cross at Jerusalem, and he became a Christian himself, although he put off being baptized until he was on his deathbed.[1]

It was Constantine who made Christianity the State religion of the Empire, and the first Christian churches that we know of were built in his time.[2] These first churches followed the arrangement which we still use to-day, a nave with side aisles. It was the arrangement of the Roman basilica, and so it is called the basilican type of building. In fact the word "basilica" has come to mean

[1] According to the ideas people held in those days, this was a very shrewd scheme; for baptism wiped out all the bad record of the past, so that anyone who died just after it was sure of eternal salvation.

[2] Though there must have been some built before this, besides the chapels in the Catacombs and other secret places, for Diocletian, one of the emperors who persecuted the Christians, ordered that their churches should be destroyed.

a church, though the original basilicas were buildings used as exchanges or market halls. They were large places of public assembly, which quite naturally suggested themselves as models when some sort of religious meeting place was wanted.

Somewhere in the precincts of the pagan basilica, and sometimes at one end of it, was a space used as a law-court. It was shut off by metal screens and had a semi-circular apse—i.e., a rounded end—with seats running round it, the seat of the judge or tribune being in the middle of them. The Christians adopted this as the regular form for the sanctuary of their churches. The clergy and elders sat round the apse, with the bishop or priest in the tribune's place and the altar in front of him. Sometimes there was a choir as well, and the screens (*cancelli*, in Latin) which shut it off gave us our word " chancel " ; the other word they have given us—" chancellor "—reminds us of the tribune who sat behind the screens, in his official seat of judgment.

Even before the time of Constantine, the Romans had been finding it more and more difficult to resist the pressure of the savage tribes on the various frontiers of the Empire. Rome itself was awkwardly situated for sending reinforcements quickly in the case of any sudden emergency, for to get to Gaul or Germany they had to cross the Alps, and to get to Asia they had to go oversea. One or two of the later emperors had thought of making a new capital, and Constantine at last carried the idea into effect. He chose the old Greek city of Byzantium, renamed it Constantinople, and moved there in 330.

It is a great pity that no one has left us an account of how the Court and Government settled down in their new quarters, and what happened in Rome when it was abandoned

in all its splendour after having been the ruling city of the world for nearly 500 years. The whole story must have been full of dramatic interest and detail. We can imagine the excited scenes on the day when rumour was confirmed, and the decision was published ; the consternation of the Roman tradespeople ; the searchings of heart, whether to go or stay ; every one in Rome trying to sell, and every one in Byzantium frantically speculating as prices soared sky-high. And then the day when the crowds lined the way to see for the last time the emperor's litter carried through the streets, surrounded by the gorgeous pageantry of the Court ; and the blank feeling of dullness with which, after he had gone, people settled down to face the drab future.

The people of the New Rome were chiefly Greeks, and the Byzantine (or " Eastern ") Empire soon became more Greek than Roman. These Greeks of the fourth century, however, were very unlike their great ancestors of 700 years before, and the remains of Roman vigour were gradually submerged by the softness and luxury of the East. Although the Eastern Empire lasted for more than a thousand years, until 1453, when the Turks took Constantinople, its history was not very distinguished.

The earliest Byzantine building which is left to us in Constantinople shows the changes which the first two hundred years of Greek influence brought about. It is the great Cathedral Church of the Wisdom of God, now called the Mosque of Santa Sophia.[1] It dates from the reign of Justinian, in the sixth century, and it is in many ways the most remarkable building in the world. It was designed and built by Greeks, and once again we seem to see the Greek mind taking hold of certain definite ideas and

[1] I.e. " Holy Wisdom "—not " Saint Sophia."

carrying them out to an absolutely logical and consistent conclusion. The idea in this case is the arch, and here at last the arch principle does come into its own ; for Sta. Sophia is a great domed church entirely composed of curves, and the domes and vaults are built of brick, so that all over the building there are thrusts which have to be met and balanced by other thrusts or by buttressing piers. A contemporary writer says : " He gave the walls strength to resist the pushing arches, which were like active demons." Even the bare section of the building (Fig. 11) conveys a

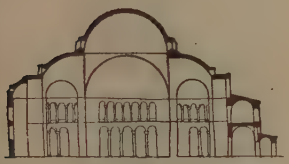


FIG. 11.—Sta. Sophia : Section.

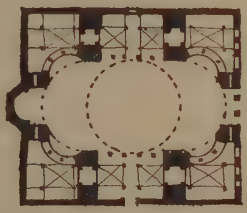


FIG. 12.—Sta. Sophia : Plan of central portion.

sense of buoyancy, curve rising from curve with a suggestion of a mass of soap-bubbles. The dome rides on the crown of the lower half-domes with a wonderful effect of lightness : it seems to float in the air " as though it were suspended from heaven by the fabled golden chain."

Notice specially one or two points about this building :—

(1) How splendidly it carries out the Roman idea of an immense clear space (Fig. 12). The body of the church is 250 feet long by 107 feet broad and 179 feet high to the crown of the dome ; the largest room with a clear floor that had ever been built.

(2) The interior is everything, and the exterior is hardly considered : the flat dome scarcely shows outside.

(3) But inside, the dome is the centre of the whole design, for the whole church is grouped round the central space.

Santa Sophia is the exact opposite of the long and narrow " basilica," and the two types of plan—Eastern and Western —have competed for mastery ever since. The decoration is carried out in the materials the Romans used, marble slabs for the wall lining with mosaic above, but the capitals are of a new eastern type, with under-cut foliage which shows the Greek feeling in the crispness of its forms.

The outside of Sta. Sophia has been a good deal changed by the addition of huge buttresses and four tall minarets. Inside, the mosaics are mostly covered by whitewash, and nothing is left of all the treasures and relics which make such an astonishing catalogue in the accounts of the church that have come down to us—the great screen with its twelve silver columns ; the silver doors ; [1] the chariot of Constantine, and his crown which hung above the High Altar ; the Ark of the Covenant, brought by Titus from Herod's Temple, with the Tables of the Law and the pot of Manna ; the robe of Christ and the lance, sponge, and reed, of the Passion ; the " splendid chest called Jerusalem " ; the " large basin-like stone on which they say Abraham gave the angels food " ; and the very doors of Noah's ark ! But the building itself is practically unchanged : it is the same church which saw the glories of Justinian and his successors for 900 years ; the sack of the city by the Crusaders in 1204 ; the last solemn Mass, celebrated at night before the Emperor and his Court, and the Day of Terror—May 29th, 1453—when the Empire went down before the Turks. Very few other buildings can equal its record of fourteen

[1] One is now in St. Mark's, Venice.

hundred years' continuous use, and there is no other church in the world which has had such a dramatic history.

When Italy was over-run by the barbarians its connection with the Eastern Empire was almost completely severed, but the Empire managed to retain one last stronghold on the north-eastern coast. This was the great seaport of Ravenna, which had a unique position, being defended on the landward side by impenetrable marshes. From there the Byzantine influence spread widely over the Venetian lagoons, and this little corner of Italy is now the only place west of the Adriatic where any pure Byzantine work is to be seen. And wherever one comes on it it is a real joy; for even where there are no mosaics the wonderful colour of the marble shafts and the infinite variety of crisply cut ornament make this style a thing apart. The details of the decoration form a link between Eastern work and Western, for very often—especially in the panels of carving or screens of pierced marble tracery—there is a reminder of Persian or Indian design. The Byzantine style is Eastern, too, in being pre-eminently a style of colour. A writer who described Sta. Sophia soon after it was built, talks of "marble from the Phrygian range, in which a rosy blush mingles with white," Lybian marble "of crocus colour glittering like gold," and "marble that the land of Atrax yields, in parts fresh green as the sea, or again like blue cornflowers in grass, with here and there a drift of fallen snow."

Venice, which was a great trading port and in constant touch with Constantinople and the East, is more Byzantine and more full of colour than any other city in Europe; and St. Mark's at Venice, although not built until 1070, is the best example of a fully-developed Byzantine church, for as time went on the Byzantines attached more and more importance to mosaic, and at St. Mark's the mosaic is

allowed to govern the whole design of the interior. The inside of Sta. Sophia is " singularly full of light and sunshine " ; the details all show clearly, and the mosaics merely decorate the different surfaces. But at St. Mark's the whole effect depends on the mosaic and not on the architectural forms. It is a domed church, but instead of being designed round one large dome it is planned as a cross, with five low domes almost equal in height. All the forms are kept simple, and the angles are just rounded so that the mosaic may sweep unchecked all round the interior. The light is very subdued, coming chiefly from small windows in the domes ; and the dull gold ground of the mosaic, with its dark figures in rich colour, seems to smoulder in the dim recesses of the vaulting. This interior has an emotional effect such as we seldom meet with in the West, for in the West the chief consideration has always been *form*, and form cannot stir the emotions in the way that colour does. Chartres, with its glory of stained glass, and the Lower Church at Assisi, with its frescoed dimness, are perhaps the only two churches one could compare with St. Mark's in this respect, and in both cases colour is the governing feature.

None of the styles which come into the story of Western architecture can compare with the Byzantine for wealth of varied and lovely detail, beauty of the materials themselves, and skill in displaying this beauty to the uttermost. Unfortunately, few of us get the chance of seeing any actual Byzantine work ; but it is important to realize something about its general character, because, in the darkest centuries after the fall of Rome, Constantinople and Ravenna were almost the only places in which the traditions of art and architecture were kept alive, so that when a new (" Romanesque ") culture began to emerge from the ruins of the

A Byzantine Interior : Torcello

Western Empire it was bound to be influenced and inspired by the living art of the Byzantines.[1]

[1] An adaptation of the later Byzantine style has been used in our own times for the building of the Roman Catholic cathedral at Westminster. The vast interior has a Roman grandeur of scale, and an impressiveness hardly to be matched by any church in England ; and although its details lack the vigour and refinement of real Byzantine work, it does, at any rate, give us an opportunity of studying the play of light upon mosaic vaulting, above walls lined with figured marble, and so helps us to picture the interiors of Roman and Byzantine buildings.

CHAPTER VI

EUROPE AFTER THE ROMANS

OUR ideas about the fall of the Roman Empire are apt to be rather misleading. We think of wild barbarian hordes breaking down the defences and pouring in to submerge Roman life and civilization ; and so far as Britain is concerned this is what actually happened. But elsewhere, the barbarians who took possession were for the most part not the wild tribes from outside the Empire but people who had been living inside it for many generations. It had become a regular practice of the Romans to bribe the troublesome frontier tribes by letting them settle inside the Empire on condition that they provided a fixed number of men for military service, and many of the barbarian leaders that we hear about—like Alaric the Goth, who first sacked the city—were really Roman officers who had some grievance against the government or some private axe to grind.

Alaric's capture of Rome in 408 opened a long chapter of disasters. Within forty years, Britain, Gaul, Spain, and Africa, were all lost, and Attila " The Scourge of God " and his Huns swept across the north of Italy, leaving ruins and desolation everywhere behind them. After another sack of Rome, by the Vandals, and a last sequence of eight puppet Emperors of the West in twenty-two years, Italy remained in the hands of one German tribe after another for about three centuries. In the middle of the sixth century Rome itself almost ceased to exist, for Totila the Goth determined to level it to the ground and plough over its site, treating it as the Romans had treated Carthage. He was only dissuaded by ambassadors from the Byzantine Emperor, Justinian.

This was the darkest period of all. The city was taken four times in six years, and in 546 it actually lay for some time abandoned, without a single inhabitant.

The next invaders were the Lombards, another German people, and our first historical landmark after the long period of confusion is about the year 754, when the Pope appealed for help against them to Pepin, King of the Franks. As a reward for his defence of Italy, Pepin's son Charlemagne was made first Emperor of the Holy Roman Empire.

As far as Italy is concerned, these four centuries after 408 may well be called the Dark Ages. Of the various provinces, Gaul (which we now call France) was most successful in preserving Roman culture and Roman ways. Southern Gaul was more completely Roman than any other part of the Empire outside Italy, and the Roman buildings which are still to be seen in Provence are hardly surpassed by those of Italy itself. It was also very thickly populated, so the Goths who invaded the country in the fourth century A.D. were apparently absorbed and did not cause much serious disturbance.

A Roman poet who lived at Clermont tells us how he dined with their chief and found him very agreeable, though the manners of his followers seem to have been rather a trial to their Roman neighbours, especially their love of garlic and their habit of plastering their long hair with butter.

Tours was a great centre of Roman culture, and here, as at Lyons and elsewhere, fine basilican churches were being built in the Roman manner almost up to the end of the fifth century. To this day France is a Latin country, with a language derived directly from provincial Latin; and in the South the Roman tradition remained so strong that Romanesque churches of the twelfth century, such as

St. Trophime at Arles (see page 74), are adorned with sculpture and decoration which might almost pass as late Roman work.

In most parts of Europe the sixth, seventh, and eighth centuries are only represented by a few churches, plain and rather featureless, with round-headed windows and flat pilaster-strips as buttresses (Fig. 13) ; buildings which have so little definite character that it is often difficult to

Fig. 13.—Early Lombardic.

decide what period they belong to. But when we come to the ninth century a very definite Romanesque [1] style begins to appear under the influence of Charlemagne.

Charlemagne was King of the Franks. His dominions included Germany, France, and Italy as far south as Rome ; and having been made Emperor of the Romans he set

[1] " Romanesque " is the style which grew directly out of Roman traditions. Norman is the Romanesque style of Northern France, Saxon the Romanesque style of England : and it would be quite logical to talk of Byzantine as Eastern Romanesque.

himself to restore Roman culture and civilization. Aix-la-Chapelle in Germany was his capital, and Tours was the great centre of learning and craftsmanship for the western half of the Empire. There is something rather pathetic in the picture of this new Cæsar trying to revive imperial grandeur among his uncouth Frankish subjects. We see him as a tall man, somewhat over-stout, with bright eyes, a long nose, and rather a feeble voice ; dressed in a silver-bordered tunic and a blue cloak, with cross-gartered hose. Like most of his predecessors in the title, he had to be continually repelling the savage foes who beset his borders —fanatical Moslems this time, surging up through Spain to the Pyrenees, and Slavs and Saxons on his eastern and northern marches. And all the time " he used to keep his writing-books and his tablets under his pillow, that when he had leisure he might practise his hand in forming letters ; but he made little progress in an art begun too late in life." However, he collected at his Court some of the most learned men in Europe ; he had letters from Haroun-al-Raschid at Baghdad ; and his architect, Master Odo from Ravenna, built him a real Byzantine church which stands to this day and is part of the cathedral of Aix-la-Chapelle.

But the little gate-house at Lörsch (Fig. 14, p. 72) shows us the sort of thing that was evolved when Charlemagne's architects made a direct attempt to copy Roman examples. It is something like a pattern-book exercise " in the Roman style." There are piers with Corinthian capitals and, above, little fluted pilasters carrying an arcade with *triangular* heads instead of arches—a feature which we shall see borrowed, later on, by Anglo-Saxon builders in England.

A great school of metal-work arose under Charlemagne, and one of the most magnificent pieces of church equipment still in existence belongs to this period—the famous panelled

casing for the High Altar at S. Ambrogio, Milan. One side is of solid gold and the three others of silver, with scenes and figures in relief, bordered with elaborate patterns in coloured enamel inlays and set with large jewels. It is a wonderful treasure to have come down to us through centuries of war and pillage, and it helps to correct our impressions of what the buildings of this time were like.

FIG. 14.—Gatehouse at Lörsch.

For an altar as magnificent as this must have formed part of an interior more ornate than anything to be seen in Europe to-day, and after we have looked at photographs of the dull modern interiors of buildings such as the cathedral at Aix we can shut our eyes and furnish them in imagination with the sort of treasures which nowadays we only see, labelled " Carlovingian : ninth century," in museum cases, or have explained to us in perplexing foreign tongues in

the treasuries of Continental cathedrals. There they are, scattered and secularized by their new surroundings, but the very same treasures which gleamed through the incense smoke when for the first time some newly-converted Frankish chief and his long-haired bodyguard came in bewildered awe to the altar steps. There are shrines and caskets of solid gold with heavy encrustation of jewels or inlay of bright enamel; chalices and patens, and mysterious little boxes of Byzantine ivory engraved with stiff saints in arcaded compartments; candlesticks of bronze with dragon-feet; covers for service-books in ivory or gold, also encrusted with jewels; illuminated missals written in bold script, their title-pages and margins filled with infinite complexity of foliage and scrollwork. Under our feet the chancel paving is a rich expanse of patterned mosaic in little squares of coloured marble; the columns of the altar canopy, brought here from some abandoned palace of the Cæsars, are of Greek Cipollino, the colour of the sea before dawn; marble in softly variegated panels clothes the walls to a man's height, and from there the glory of the mosaic sweeps upward and into the dim recesses of the apse, where the Christ sits enthroned, in that aloof and ageless majesty of rigid pose which only the Byzantines could express.

The court of Charlemagne served as a link with the glories of Rome and Byzantium, and it was a great source of inspiration for all the early art of Western Europe.

The tenth century, although it was a time of fierce fighting against the northern pirates, was a time of great building activity also. Abbeys and monasteries were springing up on all sides,[1] and the general arrangement of the monastic

[1] Cluny, the largest monastery of the Middle Ages, was founded in 901.

lay-out, with its abbey church, cloister garth, chapter-house, refectory, and all the innumerable subsidiary buildings, was gradually evolved about this time.

In North Italy the work of this period is called Lombardic, and it corresponds fairly closely to what was being done in the rest of Charlemagne's dominions; but as brick was the common material there is naturally a closer resemblance to the late Roman and Byzantine buildings. By the eleventh century the Lombardic work had developed into a style of great magnificence, and a special feature of it is the profusion of sculpture and carving, the elaborate scrolls of foliage, and the grotesque beasts which crouch under the bowl of a font or even support on their backs the columns of a church porch. We see plenty of this grotesque detail in Norman work of a century later, but in the South it retained an extraordinary amount of Classical feeling and (whether it was due to the abundance of Roman remains or to the survival right through the Dark Ages of sculptors' guilds, such as the "Comacine Masters") the use of Classical detail persisted right through the Romanesque period and the Gothic, until the Roman forms themselves came back at the Renaissance.

It was about a century after Charlemagne that a body of Danish Vikings, under their leader Rollo, obtained a firm footing on the banks of the Seine and in the country adjoining. Not feeling strong enough to dislodge them, King Charles the Simple decided in 918 to make them his subjects by giving up the whole province—which from these Northmen was afterwards called Normandy—on condition that they performed an act of feudal homage to himself. He does not seem, however, to have been very successful in his attempt to impress on these masterful pirates a proper respect for the dignity of their over-lord, if we may judge

Southern Romanesque : St. Trophime, Arles (Provence)

by one incident which has been recorded. "Rollo told one of his soldiers to kiss the king's foot. The man at once seized the king's foot, raised it to his mouth, and kissed it; then he stood up suddenly, and brought the king down heavily on his back." The Normans roared with delight, and the sullen Franks dared not show their resentment, but had to swallow the insult.

The Normans showed, in France as later in England, the most surprising adaptability, and in little more than a century they had become not merely civilized Frenchmen (with a polish to their civilization which has left its mark on social life to this day) but also, after the Romans, the greatest builders Europe has ever seen. Before we deal with the effects of their appearance in England we had better see what had been happening there since the Romans left the country to manage its own affairs.

The Romans occupied Britain for nearly four centuries —as long as the period between our own times and the reign of Henry the Eighth. But for the last hundred years and more they were only just holding their own against the Northmen who gradually filtered in on all sides. In the fourth century all the country districts had become unsafe: the villas and farms had to be abandoned, and it was only in the towns that Roman life went on as usual. The garrisons were continually being reduced, and communication between Britain and Rome was finally lost about 408, when Alaric marched on the city. Two years later, the Emperor Honorius, who had fled to Ravenna, officially recognized the separation in a letter addressed "to the British Cities." He told them that in future they must look after their own affairs, for Rome would no longer be sending troops or officials to Britain.

And so the curtain falls. The next two hundred years

seem to have been a time of confused fighting and hopeless misery. The Romans and Britons were pushed back, step by step, to the West, only to come up against another lot of fierce invaders from Ireland; and even after every Roman town had fallen, fighting still went on in a sort of chaotic general mêlée. The Northmen were destroyers and had no use for anything that the Romans had left, so the whole framework of Roman life perished. The towns lay desolate and abandoned, not for years but for centuries. Probably not a single one, except perhaps London, had a continuous existence.

Building did not begin again until the seventh century when Roman missionaries were at work in the south, and Irish (from Iona) in the north.

In considering Anglo-Saxon work, we may divide it into two periods :—

(1) 650 to 950.

(2) 950 to the Conquest and a little later;

and the important thing to realize is that *none of the details which we think of as characteristically Anglo-Saxon* (*such as* "*long-and-short work*," *baluster shafts*, *triangular-headed arches*, *etc.*) *appeared at all before the tenth century*. This will save us from a great many mistakes which are commonly made.

The churches of the first period that are left to us are very plain and featureless; but we know that there were large and elaborate churches built in England as early as the seventh century. We hear of Benedict Biscop (674) bringing over, for his church at Monkswearmouth, French masons and glassworkers, and going to Rome for books, vessels, and sacred pictures.

A little earlier than this, Wilfrid built a church at Hexham which seems to have been one of the most important English

buildings of the whole period. The account of it is all the more convincing because it was not written by some contemporary enthusiast, reflecting the local excitement over its completion, but after more than 400 years by the twelfth-century historian William of Malmesbury, who had not only seen on his travels the buildings of Rome and France but actually lived at the time when all over England the great Norman buildings were in process of erection. After talking of walls and capitals "decorated with histories and images and different figures carved in relief on stone and painted," he says, "Those who had visited Italy seemed at Hexham to see the glories of Rome revived before their eyes."

William also mentions the Saxon church of his own abbey at Malmesbury, saying that the whole fabric "remained untouched and conspicuous to his own time, surpassing in beauty and size every ancient building to be seen in England." So it seems quite clear that the larger Saxon churches of the seventh and eighth centuries could really compare with those that were being built elsewhere in Europe at the time, and that Saxon work was not, as we are rather accustomed to think, merely a primitive and clumsy foretaste of Norman.

The second period of Anglo-Saxon work starts with the reign of King Edgar, when the country had at last been won back from the Danes and conditions were becoming more settled. Edgar's reign was a great time of church-building, and he and his wise counsellor St. Dunstan founded or re-established no fewer than forty monasteries. Another great church-building period was the reign of Canute (1014–1036), who did something to repair the damage done by his heathen father Sweyn Forkbeard, the last Danish invader to ravage England.

It is only from the time of Edgar onwards that we find what we might call the full Anglo-Saxon style, and the inspiration came almost entirely from Germany ; so much so that some writers will not allow the Anglo-Saxon style any separate existence at all, but treat it as a branch of the German Romanesque which grew out of Charlemagne's Classic revival. For several centuries, right down to the time of Canute, there was close intimacy between the courts of the Saxon kings and of the emperors, and frequent

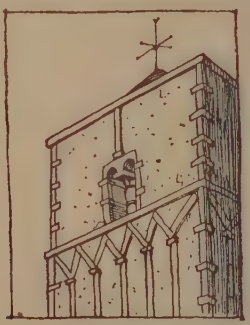


FIG. 15.—Anglo-Saxon features.

intermarriage between their families. There were also many Germans holding ecclesiastical positions in England and it is quite easy to understand the strong influence of German Romanesque culture upon this country, which had so little tradition of its own.

One feature which, as an exception, seems to have come from France, is the strange method of building corners in " long-and-short work " (Fig. 15). It seems to have been used simply for the sake of the pattern it produced, for it had no practical value. The Normans never adopted it.

" Pilaster strips " (Fig. 15) were also mainly ornamental

They originated, as we see at Lörsch (Fig. 14), in the Roman pilasters which most of the Romanesque builders adopted in the form of flat buttresses, but the thin strips used in German and Anglo-Saxon work could do nothing towards strengthening the wall.

The Lörsch gate-house also shows us the German descent of the triangular-headed arch, a strange feature which is occasionally found in late Roman decoration and which evidently pleased the Saxons.

Among the objects frequently found on the site of Roman buildings, small columns turned on a lathe are very common. The Saxons used them in window-openings, and made crude copies of them called "Baluster Shafts." This is one Saxon feature which only seems to appear in England. The baluster shown in Fig. 15 is used as a "mid-wall shaft," and this arrangement of a single shaft set half-way back in the thickness of the wall, with a strangely elongated capital, is also common in Germany. Hitherto windows had been plain single-arched openings, and here we see a first clumsy experiment in dividing the opening.

We usually see mid-wall shafts in the windows of Saxon towers (e.g. St. Benet's, Cambridge, and St. Michael's, Oxford). Church towers were probably very rare in England before the end of the tenth century: in the eleventh century they became common, for anyone who possessed land to the extent of 500 acres and had on it a church with a tower was eligible for the rank of Thane. Many of the early towers are round, which, as we see at Ravenna, was the regular Byzantine shape.

At the time of the Conquest there were about 1,500 Saxon churches in England, and there are still about 250 in which Saxon work can be recognized. We can see seventh-century work in the crypts of Wilfrid's church at

Hexham (largely built of worked stone from Roman buildings); at Jarrow and Monkswearmouth; or at Brixworth near Northampton, where the nave arcade is built with Roman bricks almost in Roman fashion. Of the later period there are the towers of Earls Barton and Barnack (Northants), Barton-on-Humber, Deerhurst (Glos.) and others, and a very interesting and perfect little church at Bradford-on-Avon. At Greenstead in Essex there is a unique example of a Saxon timber church—the original chapel built in 1013 to house the body of King Edmund the Martyr when it was on its way from Hoxne in Suffolk (where Sweyn Forkbeard's Danes shot him to death with arrows) to its burial in London. The walls are made of upright trunks of oak set closely side by side.

Canute had married a daughter of Richard, Duke of Normandy, and this began the struggle between the Normans and the Danes, as to which should rule England. All through the reign of Edward the Confessor Normans were pouring into the country, for the king was himself Norman by taste and upbringing. His great work was the building of the Abbey of St. Peter—now called Westminster—for the Benedictine monks of Thorney Island. It was probably begun about 1055, and it was a completely Norman building: "a new style of building," "the first in England in the fashion which all now follow at great expense" as a twelfth-century writer put it.

This marks the beginning of Norman work in England, but there were many Saxon churches built after 1066. Several of the most important, such as Earls Barton, can only date from the last few years before the Conquest, and the Saxon church at Sompting near Worthing may have been built as late as the twelfth century.

It would naturally take some time for the new style to

filter down to the workmen who were responsible for building small country churches. But it was quite definitely a case of one style superseding another, and not, as generally happens, of the new style growing out of the old. A church like Sompting—even though built in the twelfth century—is definitely a Saxon church and not something halfway between Saxon and Norman. The true Anglo-Saxon style was shortlived, and when it died it left no descendants.

CHAPTER VII

THE NORMANS

THE coming of Norman architecture to England was the prelude to the splendid growth of English Gothic, and the first Norman building in the country was, appropriately enough, the Abbey church of Westminster, built for Edward the Confessor by foreign workmen in a style which caused astonishment to the English.

The Normans themselves, when they came as conquerors, started at once to build castles, cathedrals, and churches, all over the country, on a scale which is simply amazing. For remember, what we call the Norman Period did not last much more than a hundred years, and in the seven centuries which have followed people have been cheerfully demolishing the work of their forefathers; yet wherever a man goes about England to-day he is certain to find some traces of Norman building if he knows the signs of it. Castles were systematically beaten down when the people had won freedom and had come to hate them as the symbols of feudal power, but the number of Norman castles of which something is left to-day must run into hundreds. And the churches in which—in spite of all the alterations and enlargements they have gone through—there is still some of the original Norman building to be seen, may be reckoned in thousands. So if we can work up a little interest in these energetic builders and in their manner of work, we shall find plenty of opportunities for looking at it and learning more about them.

Even if we knew nothing of their doings in England it would still be quite obvious that the Normans must have

been a very remarkable race of people. Only a century and a half before the Conquest we saw them pouring over the sea in their black pirate ships, as fierce a lot of cut-throat heathens as ever set out to pillage the rich Christian lands of France. "Northman" did not change into "Norman" for many generations, and quite late in the tenth century their Duke was called by his neighbours "the Duke of the Pirates." In the middle of that century their ruling clan had even slipped back into paganism. A few generations pass, and they have become Frenchmen, shedding their northern uncouthness and absorbing (or perhaps it would be truer to say "absorbed by") the Roman culture of the country. In the eleventh century it is in the Pirates' Land that a man will hear the purest French spoken; and the graces and elegances of life, together with many of the polite usages of modern society, first come to us in England from men whose forefathers were heathen raiders when England was one of the more enlightened kingdoms of Christendom. All this shows that they must have possessed quite unusual adaptability, with quick-working minds as well as vigorous bodies.

Their building genius must also have been something constitutional, for as far as we know they can never have done any mason's work in the Northland. The Viking life bred skilful carpenters, and the men who could construct a boat capable of crossing the wild sea to Greenland and America (which Leif Erickssen discovered about A.D. 1000, nearly five hundred years before Columbus) could build a good timbered hall, spacious for banquets and proof against the storms of a Norse winter. But their only experience of a stone building was that it was a troublesome thing to burn and all too easily defended by monks or townsfolk. And yet when we look at the building activity of the Normans

in England, we might quite reasonably say that nothing like it has ever been seen in this country either, before or since.

Building came into prominence at once as one of the very foundations of the Conqueror's policy. Just as we used to stick in flags on our war-maps to mark the lines of advance, so William pinned down each newly-won district by planting a garrison of Normans at some strategic point and starting them on the building of a castle. The positions were splendidly chosen, so as to command a wide stretch of country, and very often they are defended on one side (as at Durham or Richmond) by a steep bank dropping to the bed of a river. A simple square keep was probably the nucleus round which, as time went on, would grow one ring after another of separate enclosures for defence ; the gateways with their guard-rooms and rounded bastions to cover the approaches, the outlying strong points to guard some piece of dead ground, all continually elaborated and improved to keep pace with the latest developments of military science. The garrison had to be entirely self-supporting, so craftsmen and workers of all sorts were employed, and quartered inside the walls, and the castle thus became a little fortified town, just as the medieval town (still to be seen, almost in its original form, in many parts of France and Italy) is only an enlarged version of the castle.

The first Norman castles rose very rapidly. As early as 1068 the new fortress at Shrewsbury was an important factor in restraining the Welsh borderers when all William's enemies combined in one great effort to overwhelm the Normans in England. Edgar the Saxon "Pretender" appeared in the north, with Scottish allies to help him Sweyn of Denmark swept down from the Humber, and

all the south-west of England rose up in arms. But William showed his quality as a general and as a fighter, and in a series of whirlwind campaigns he crushed his enemies all over the country. Two years were spent in consolidating the ground he had won—by building more castles ; then he stamped out the last stubborn attempt at resistance in the fens of Ely, and by 1071 he had disposed of Hereward and pushed right up into the heart of Scotland, where he made King Malcolm his vassal. The Norman Conquest was complete.

Even before fighting had stopped, church-building on a large scale was already in hand. At Canterbury the new archbishop (Lanfranc) must have started planning as soon as he arrived, for the rebuilding of the cathedral, which was partly ruinous, was actually begun in 1070. Bury St. Edmunds was started in the same year, St. Albans in 1077, Winchester 1079 and Ely 1083. From this time onward, the tide of Norman church-building swept over the country in ever-increasing volume. Practically every large church or cathedral was rebuilt, though many of them had only been completed for a very short time ; new abbeys and monasteries were founded—about forty for the Benedictines alone ; and the lord of every manor had to provide a church for the use of his people.

One thing stands out very clearly in all this and gives us a feeling of sympathy with the Normans : they evidently *liked* England immensely as soon as they saw it. It appealed to them in all sorts of ways, and instead of regarding the new country as a sort of dependency of Normandy they seem rather to have seen in the Conquest the opening of a new era for their race, in which its greatness and importance was to outstrip everything that had gone before. After the English rising all the land was confiscated and distributed

among the Normans, who naturally flocked over to settle here. There was wealth and a pleasant home for every one, from the common foot-soldier up to the Duke's brother Odo, who got about 400 manors as his share! The exciting five years from Senlac to the submission of Malcolm, the dramatic completeness of the Conquest, and the Duke's genius for success, followed by general distribution of the spoils with instructions to settle down and live happily ever after, must have created among the Normans an extraordinary feeling of elation. And this seems to be reflected in the scale of their buildings, for nothing like it had been seen in Europe since Roman times. Normandy could show nothing to compare in size with the English churches. Bury St. Edmunds was over 68,000 feet in area; the Conqueror's great Abbaye aux Hommes in his own town of Caen, under 30,000. Santa Sophia at Constantinople is only 60,000, and nowhere except in Rome itself were there any churches larger than ours. Westminster Hall remains to-day the largest hall in England, and William Rufus, for whom it was built, entered it for the first time with a contemptuous grunt of "too small!"

Even to-day the enormous mass of such buildings as Ely Cathedral strikes the imagination of men who spend their lives in the environment of huge buildings, and it is difficult to conjure up the impressiveness of one of the great Norman churches rising in all its bravery of newly-worked stone above the huddled mass of tiny wooden houses and booths which made up a town of the eleventh century. Yet unless we bear this contrast in mind we shall do less than justice to the achievement of the Normans. In Lincoln and elsewhere we can see two-storey stone houses built by rich Jew merchants in late Norman times, but apart from a few exceptions such as these there was probably

no stone used for anything except churches, castles, and fortifications, and few of the houses would have an upper storey.

The Normans had the imagination, then, to put in hand buildings of a stupendous scale and in astonishing numbers ; but even their determination might have failed in face of the practical difficulties they had to contend with. For these hundred years or so were not a time of peace and prosperity, as we might judge from the amount of work that was got through. The Conqueror spent most of his twenty years' reign in warfare against English, Welsh, Danes, Scots, French, and his own rebellious son in Normandy. Rufus had first to crush a rising of the barons in England, and later a rebellion in Normandy ; he had campaigns in Wales and Scotland, and he was on thoroughly bad terms with the Church owing to his habit of confiscating ecclesiastical revenues to pay for his personal extravagances. Then after thirty-five better years under Henry the First from 1100 onwards, the whole country seems to have been in a state of anarchy while Stephen and Matilda fought each other up and down, and the Bad Barons, each in his robber stronghold, outdid the most gruesome records of the fairy stories.

There was, besides, the problem of labour and supervision. It was a new style that was being introduced, so all the supervision, and much of the more difficult construction, had to be done by Normans ; and there must have been a strictly limited supply of men with sufficient training and skill, for important building works were still going on all over Normandy itself. Nowadays one architect or master builder may control a number of large jobs all over the country, visiting one after another continually ; and skilled workmen of any particular trade can be moved from one

place to another as they are required. But 800 years ago a journey from London to Gloucester was a long and perilous adventure, needing much preliminary scheming and preparation. The masons for whom Abbot Serlo was waiting with such impatience, wanting to get his aisle vaults turned and a part of his church made fit for use, might be killed on the way by forest outlaws, or intercepted by my Lord of Belesme, who was badly in need of some skilled assistance for the building of his new keep at Hauterive. And the good Abbot would have little chance of finding out why they never arrived.

The unskilled labour was supplied by the English, and sometimes the work was sufficiently under English control for recognizable Anglo-Saxon features to appear. At St. Albans, for instance, there are regular Saxon "turned balusters" in the transepts. There was a good deal of shoddy workmanship in these sturdy Norman buildings, which may possibly be put down to the English workmen; bad foundations, and columns which look terrifically solid but really take all the weight on a thin outside casing of stone, the inside being only a hollow filled with dust and rubble. So there was a fairly constant succession of disasters —small ones, as when the thrust of an aisle vault pushed over the outside wall, and big ones, as when the vast mass of the central tower came crashing down, demolishing most of the chancel and transepts at the same time: and the rate of mortality among central towers of this period was a pretty high one! The employment of native labour was not made any easier by the fact that every part of the country still spoke its own dialect. Even at the end of the fifteenth century a man from the Essex shore of the Thames Estuary could scarcely make himself understood if he got carried across to North Kent.

And if there were difficulties about labour and supervision, the position with regard to materials was still worse. Road transport was very little used, for neither the bridges nor the road surfaces were really equal to the weight of heavy traffic ; so whenever it was possible the stone was brought by water. The fine creamy stone from Caen, which the Normans were accustomed to use at home, was brought across the Channel for the building of Chichester, Winchester, and other cathedrals. For Norwich, stone from Barnack in Northamptonshire came down the Welland, and then by sea, and finally up the Yare. The blocks were generally cut to standard sizes, only a foot or two square, for ease in handling. Considering the difficulty and expense of getting the material, and the enormous quantities which were needed to build a church in the solid Romanesque manner, it is not very surprising that the development from Romanesque to Gothic was in the direction of economy in stone. The builders gradually concentrated the loads more and more on a few piers, and got rid of the great expanses of solid walling by which these loads had previously been carried.

And what was it like, this Norman style which was impressed upon the whole country ? We shall be quite wide of the mark if we imagine that at the time of the Conquest it was something developed and complete which had grown to maturity abroad before it was imported into England ; for it really had not got very far at that time. It was in the great English churches that the Norman style developed, and the first early work in this country is in many ways crude and clumsy. Like the Saxon and the other styles which had emerged from the Dark Ages, it was thoroughly " Romanesque " ; which means that it carried on the Roman system of building, in which weight and thrust were resisted

by continuous masses of solid wall. It was inert and ponderous as compared with the later style.

Its distinction, as contrasted with the Anglo-Saxon, was that the Normans had really worked out a satisfactory means of self-expression; they had found, as it were, certain useful terms which could be made into sentences to express various ideas. For besides arriving at a certain definite scheme of construction they had decided upon certain definite forms for capitals, columns, and arches, which could be combined to meet all the ordinary needs of building. In the same way, when we look at the origins of the Classical styles we cannot help feeling that the threshold of really great architecture was only reached when, after centuries of experimenting with this form and that, people arrived at the perfectly satisfying form of the Doric column and evolved the Doric scheme of building, with its strictly limited repertoire of colonnade, entablature, pediment, and the rest.

Look at any large building of early Norman date and notice how few were the features or motifs which formed the builders' stock-in-trade, and how cleverly they were arranged in varied combinations: square piers and round shafts with "cushion" capitals, round arches, zig-zag chevron ornament, and one or two other simple patterns—practically nothing more; but these were quite enough. The ordinary window was a round-arched opening: to make it more important, one of the stock shafts was put on either side to carry the arch, and a smaller arched opening was fitted inside the other, slightly recessed back from the wall-face (Fig. 19, *a*: p. 115). The same scheme served for a doorway, and this could be made very imposing by using what are called "recessed orders." Inside one arch another was fitted, slightly smaller and standing back a little, and then another

inside that, and so on up to the number of six or seven recessed arches, producing an elaborate range of shafts and capitals " in échelon " on each side of the doorway. The same shafts and arches might be used to decorate a piece of plain wall-surface, making what is called a " blind arcade."

Perhaps it all sounds rather mechanical; but there is something extraordinarily satisfying about this abstract " formula architecture " which one loses again in later Norman work with all its variety of detail, where every capital is differently carved and every arch has a different pattern of enrichment. The nave of Ely is a splendid example of the more severe type, and the fact that it is entirely made up of abstract forms which do not copy any natural object or aim at representing anything at all, seems to play an important part in deepening the impression it creates.

A few yards away is the Prior's Doorway, one of the finest specimens of Norman work at the other extreme of elaboration and intricacy. In the nave we see the structural forms with their simplest shapes only slightly refined and softened down.[1] In the Prior's Doorway, not only have the shapes been further elaborated, but over the whole composition there has been thrown a cloak of rich decoration, covering the shafts themselves just as it covers the capitals and the arch mouldings.

The stern simplicity of early Norman work, as contrasted with the richness of Southern Romanesque, is partly due to the absence of sculpture, which was not developed until well on in the twelfth century. In the South there were

[1] The cushion capital, for instance, is only a square block with the bottom part cut away to make it sit more comfortably on top of the round shaft.

Roman remains everywhere to inspire the carver—coffins, altars, and sculptured capitals—and how closely they were followed can be seen by the photograph of the doorway at Arles (p. 74). But this was not so in the North.

It was not very long, however, before sculpture and carving were taken up enthusiastically, and in late twelfth-century work we find a richness of decoration which surpasses anything that followed in Gothic times. A vast number of patterns were evolved for the enrichment of arches, and most of them have by now been given technical names. There is the " Billet," " Cable," " Star," " Double Cone," " Cat's Head," and a host of others. One of the strangest is the " Beak-head " ornament, in which a series of birds' heads with staring eyes point their long beaks inwards towards the centre of the arch. It would be quite an interesting hobby to go about the country and see how many of these Norman patterns one could collect.

But the Norman style developed, in the twelfth century, in more important directions than decoration and ornament ; and the account of its further progress needs a chapter to itself.

CHAPTER VIII

FROM NORMAN TO GOTHIC

THE change from Romanesque to Gothic, which began in the last half of the twelfth century, was much more than a change of outward form : it was the whole system and principle of construction that was altered. But when we try to discover what, exactly, the change was, and how it came about, we find that different people give the most divergent accounts of it.

One account deduces the whole Gothic system from the fact that the builders of the Middle Ages had perforce to be economical in their use of stone, and gradually worked to this end until they produced buildings with hardly any solid wall-space at all. Another account tells us that in order to solve a particular problem of vaulting it was necessary to invent or introduce the pointed arch,[1] and then everything else followed more or less automatically. Other authorities consider that far too much stress is laid on constructional necessities, and that the change from " solid and composed Romanesque " to " eager, animated Gothic " merely reflects the difference between the torpor and apathy which the Roman routine induced in the minds of its subjects and the vigorous energy of the northern races with their keen love of experiment and adventure. The Gothic outlook and ideals produced, we are told, the Gothic style in building.

One of the lessons that life teaches us most surely is that truth is many-sided ; and none of these explanations is likely to prove complete or satisfactory by itself. But we

[1] See page 109.

shall probably find that the explanation based on necessities of construction will help us rather more than the vaguely poetical description of Gothic vaults as imaging the overarching branches of a forest glade; and the people who explain the splendour of the Gothic cathedrals by the fact that they were built in a spirit of religious fervour should go on to tell us why they think that there was more devotion in the thirteenth and fourteenth centuries than in earlier times. As a matter of fact, the more we study historical records the more likely we are to come to the conclusion that the workmen of the Middle Ages, though generally better craftsmen than those of to-day, were on the whole very much like them in their virtues and failings and in their general outlook.

We must give the practical, social, and spiritual considerations their proper place, not expecting to find the answer in any one of them by itself. It is quite true that changes of form and style came about mainly because new problems of construction cropped up which could only be solved by experiment and invention. But these new problems only cropped up because some new factor in the life of the times—a new political or social development, a new enthusiasm, or a new trend of thought—had led people to try to change their fashion of building.

Even if we do not feel that the necessity for using less stone is a sufficient explanation of the Gothic style, we must admit that indirectly it played an important part in bringing about the change; and here is another case where, having taken up a point which seems at first sight to deal entirely with construction, we find that we can only explain it by referring to social conditions.

The huge buildings of Roman times were put up mainly by slave labour, and the amount and cost of this labour

and of the material used seems hardly to have been counted. The walls of the Pantheon are of solid concrete 20 feet thick. At Baalbek, far out in the Syrian desert, we can see a temple plinth built of stones which average 30 feet in length ; and hoisted 20 feet high on this plinth are three stones each about 63 feet long, 12 feet high, and 10 feet thick—single blocks each one as long and as high as a fair-sized ball-room, yet so closely jointed that the blade of a knife can scarcely be inserted between them.

After the time of the Romans, the erection of really large buildings ceased in Europe for six or seven centuries, and when it began again it had to be carried on under very different conditions, without the vast resources which had been available before. So ways and means of using less stone had to be devised, and this end was achieved most effectively by a policy of " concentrating the loads." This meant that instead of the weights and thrusts being evenly distributed along walls which had to be made thick enough at every point to resist the pressure, they were collected at certain points where solid masses of masonry were built to receive them. *So long as these masses were adequately provided in the right places, the space between could be left open or filled in with any sort of a screen—thin masonry, or even glass.* This is a fact which we must grasp clearly, for it marks the really essential distinction between the Romanesque and Gothic systems. It also explains many of the vague impressions which the two names convey to us ; the airy lightness of a fifteenth-century church with its huge screens of coloured glass, in contrast to the gloom of a Romanesque one, scarcely relieved by the light from small windows set far in the depth of the wall ; and the impression of life and vitality which the Gothic building conveys, its aspiration and its soaring character, as opposed to the

solid inertness with which the great bulk of the other presses downward on the ground.

"Concentration of Loads" was, as we have said, one of the main lines of Gothic policy, and that brings us to the all-important subject of vaulting. Nothing else played quite such a prominent part in the development of Gothic architecture, so it is worth while taking some trouble to realize what the problems were that had to be solved.

To begin with, why was it necessary to have stone vaults at all? We seem to hear very little about them before the Middle Ages, and very little after. Well, for one thing, people wanted to roof their more important buildings with stone for protection against fire. This was an obvious necessity in the days when fighting of some sort was a more or less normal state of affairs, and when the ordinary buildings of a town were so much firewood, liable, in those times of open hearths and naked lights, to go up in a blaze at any moment and endanger everything in the neighbourhood. Besides, there was "wild fire" or lightning to contend with, and time and again we hear of churches being destroyed by fires started in this way. Lightning-conductors are a commonplace nowadays, and we hardly realize the risks that all large buildings ran before they were introduced.

Then again, when a wide space was to be roofed with timber the first thing that had to be considered was the length of the tie-beams that would be available—the great beams cut in one length out of a solid trunk of oak or chestnut, to span the distance between wall and wall, tying the walls together at the point where the thrust of the rafters was always tending to push them apart. Thirty to thirty-five feet was as much as could be hoped for, so here was the limit of breadth for the nave of your church

or cathedral—and that was a handicap not to be lightly accepted when each builder was determined to go one better than the other.

It was the old difficulty of beam-and-lintel architecture, the problem of roofing a large floor space without obstructing it with columns. The Romans had found a solution in the use of large vaults of brick, stone, or concrete ; but the secret of their methods had for the most part been lost, and the builders of Romanesque times had to tackle the problem almost from the beginning.

The simplest form of vault is the " Barrel Vault," which is just a semicircular tunnel ; but with this form it is very difficult to get any windows higher than the " springing

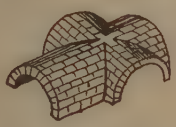


Fig. 16.—Groined vaults.

line," and in Roman times an improved system called " Groined Vaulting " had already come into use. A groined vault consists of two lengths of barrel vault intersecting at right angles (Fig. 16), the " groins " being the sharp edges along the lines of intersection. Groined vaulting in the Roman fashion was much used by the builders of that " Primitive Romanesque " out of which, early in the eleventh century, the Normans began to shape their own style. It was first applied to one square or oblong compartment (as at the " crossing," where the vaults of nave and transept intersect) ; but there were also the long stretches of nave and aisles to be roofed, and this was done by treating them as a series of such compartments put side by side.

Suppose we have to roof a nave which has an arcade of

three arches on each side. This means three vaulted compartments, and pier No. 2, for instance, on the north, is joined to piers 1 and 3 on the south by diagonal groin-lines descending on to its capital (Fig. 17). The groined compartments are usually separated by "transverse"

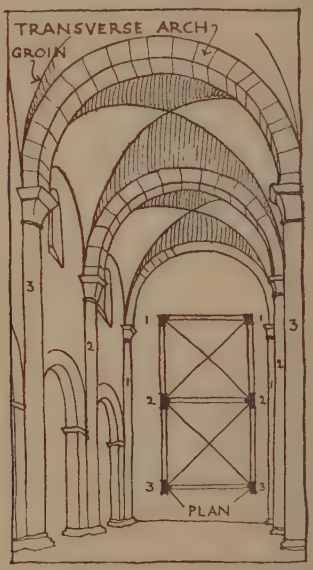


FIG. 17.—Two bays of groined vaulting.

arches, i.e. arches going straight across, as from pier No. 1 on the south to pier No. 2, exactly opposite, on the north. These transverse arches were built first, so that the centering

[1] Centering is a temporary wooden construction so made that its outer surface takes the exact shape of the underside of the arch which it is desired to build. It is hoisted into position and the arch is built up on it, receiving its support during the process

for the vaults could be supported off them. This centering had to be a complete model (full-size, of course, and made of timber) of the whole compartment of vaulting—an enormous and cumbrous affair to construct and hoist into position, for the compartment might be as much as 30 feet long and 20 broad.

The Romanesque groined vault was, then, not at all easy to build. Besides this, it was dangerously weak along the groins, and often positively unsightly owing to the difficulty of getting these groins to work into a proper curve. All the same, the builders of the eleventh and twelfth centuries used it most skilfully, extending its use from crypts where the compartments were small and low to aisles where they were larger and higher, and then to the naves with their great height and span. Nor did they stop at vaulting rectangular compartments, for once they had really mastered the art of groined vaulting they succeeded in applying it to the more complicated and irregular shapes, such as those which confronted them when they had to vault a semicircular apse and the aisle or "ambulatory" which ran round it.

At the end of the eleventh century we come to a new advance—from groined to ribbed vaulting. It is an epoch-making step, for all Gothic vaulting is ribbed vaulting, and but for the development of the rib system we could never have had Gothic architecture; and the earliest ribbed vaults which we can date with any certainty occur in England, in the choir aisles of Durham (1099). These are apparently several years earlier than any known French ribbed vaults—a fact worth bearing in mind, because we read so much about England borrowing the Gothic style from France.

In its simplest form, the rib is merely a diagonal arch built

under the line of the groin. This so immediately gets rid of practically every difficulty connected with groined vaulting, and is such an obvious development, when once the transverse arch has been introduced, that it seems strange to think of groined vaulting going on for twelve hundred years or so before anyone made the discovery. First of all, the centering difficulty almost disappears. The transverse and diagonal arches are built first, on ordinary arch-centering; this gives the skeleton of the vault, and the rest is simply a matter of filling in the space (called the "web") between rib and rib.

The stone filling of these web spaces (which are triangular in shape; see plan, Fig. 17) was not laid flat on the back of the ribs: its surface was slightly curved, so that each course of stone became a (rather flat) arch thrown across from one rib to the other. The distance between the ribs is in most cases so great that this arching is obviously necessary; otherwise only the strength of the mortar would prevent the stones of the filling from falling through.

Besides getting rid of the great difficulties of centering the diagonal rib gave support to the weak line of the groin. It was also most valuable from the point of view of appearance. Whereas, before, the line of the groin usually came out wobbly and irregular, having to be coaxed and camouflaged before it would give the appearance of a true arch line at all, it might now work out as it liked, for its actual form was entirely concealed by the perfect arch of the diagonal rib. The era of "Vault-building Without Tears" really seemed to be approaching!

It was, then, a very important step that was taken, before the eleventh century was out, in the remote northern city of Durham, where the huge mass of the new minster, with its clinging web of scaffolding, rose out of the woods hig

above the Wear. Hitherto Italy or France had led the way in building fashions and discoveries, but for the next two or three centuries the genius and the special preferences of our Norman-English builders were to leave their impress upon the work of all our neighbours on the Continent.

As we look at this new vault, with its diagonal ribs running down to meet the transverse ribs in one point above the shaft, we notice that the building is becoming more "articulate": the system of the construction shows itself more clearly and the meeting of these rib-lines explains, like a diagram, the concentration of the vault-load above the piers. In the buildings of Roman and early Romanesque times the various forces at work—thrust and counterthrust—were concealed, as something of which the builders were rather ashamed, by being smothered in enormous masses of masonry. The Gothic builder loves to show the forces he is contending against and the measures he is taking to deal with them; and he seems to have been at pains to point out and to underline the direction of the thrusts, to show how he has gathered them at the points where the piers come, and how he then proceeds to dispose of them and to conduct them down, along lines of his own devising, till they bury themselves in the earth.

We have seen how loads and pressure came to be concentrated at certain points in the building; let us see now how they were then dealt with. To understand this, we must remind ourselves of a few elementary facts about the arch—for it was these facts that decided the main features of Gothic construction.

When we say that "the arch never sleeps" we mean that it is for ever trying to spread outwards at the springing-level. Take a piece of springy cane and bend it in a half-circle, and you will have a practical example of this rest-

lessness, although the causes are not the same.[1] You can keep the ends of your cane half-hoop from springing apart by various means :

(1) By tying them together : and so you will sometimes see the feet of arches held by metal tie-rods (as in Westminster Abbey) ;

(2) By putting some heavy mass at each end, against which they press in vain. This is called an " abutment " or buttress.

(3) If this abutment is not strong enough to resist the sideways thrust, you can still prevent disaster by pressing vertically downwards upon it with your finger. The Gothic pinnacle, which might appear to be mere ornament, is—by the downward pressure of its weight—reinforcing the buttress in exactly the same way.

(4) If you could get another half-hoop (of just the same degree of springiness as the first), or half a dozen more so that you could arrange them, foot to foot, to form an arcade, each one would be held by its neighbour *so long as the arches at each end of the arcade were held firm.* This counter-thrust of arch against arch was one of the most important methods used by the Gothic builders (though of course it was employed also in Roman, Byzantine and Romanesque work). Bearing these points in mind, we shall find that the system on which even an elaborate Gothic church was built becomes at once quite intelligible.

At first it was only in the aisles that groined or ribbed

[1] The " arch-principle " only applies to an arch built up of wedge-shaped pieces called " voussoirs." The crown of the arch constantly tends to fall, owing to gravity, but the shape of the voussoirs is such that its downward pressure wedges them more tightly against each other, and so long as the bottom voussoirs remain firm the whole arch is kept rigid.

vaulting was attempted : for here buttresses could be built outside, carried up to the full springing height of the vault, and windows made between the buttresses to light the aisles. The thrust of the vault was securely held between the piers of the nave arcade on one side, and the buttresses on the other. (At first the aisle wall was itself so massive that little or no extra thickening was needed where the thrust was received. The projection of the buttress was gradually increased as the mass of wall surface was reduced. Norman buttresses are little more than flat pilaster-strips.)

The nave, until late Romanesque times, had only a wooden roof with a flat painted ceiling such as can still be seen at Peterborough and Ely. Some churches in Normandy seem to have had groined vaults to their naves before the end of the eleventh century, but no one ventured to build a ribbed vault so high in air and over such a span till about 1130, and then it is again Durham which apparently leads the way. From that time onwards the great problem was how to deal with the thrust from this vault, collected at a point which got higher and higher above the aisle-walls as the height of the church increased (Fig. 18, p. 104). This problem exercised men's minds, and influenced the appearance of their buildings, almost more than any other.

The thrust was at first met by turning a quarter-circle arch against the point of pressure, and this arch was covered by the slope of the triforium roof. But as the nave rose higher, the buttress arch had to emerge above the roof (when it was called a " flying buttress ") and a towering mass of masonry had to be raised to provide its springing and abutment—this vertical buttress sometimes being so high that it, in its turn, had to have its upper part strutted against the main wall by a second arch ; and so we come to the " stone scaffolding " of flying buttresses such as we see

at Westminster, where, on the south side, the extra projection of the cloister has made it necessary to have two ranges of buttresses connected by flying struts of stone in three tiers, so that one can hardly see the church for its supports !

" Gothic, in short . . . one is tempted to say, is less a style than a fight. . . . Every portion of the structure is in

FIG. 18.—Gothic and Romanesque sections and their abutment.

violent and furious action. The immense weight of the lofty roofs, flung sideways by the thrust of their vaults and threatening to burst the whole building asunder, is met and checked by the pressure of vaults setting in the opposite direction. Thrust meets thrust in full career. The aisles and side chapels push for all they are worth against the strength of nave and chancel, while the thrusts too high for them to deal with are

Flying Buttresses at Beauvais

encountered by the lofty zig-zags of the flying buttresses and guided to earth." [1]

The concentration of loads and thrusts on to certain points was accompanied by the gradual cutting away of those parts of the wall surface which were not taking the thrusts, and could therefore be spared without weakening the building. And so in time we come to the full Gothic church, which is really a stone skeleton of piers, ribs and buttresses—the lines along which the " Battle of the Thrusts " is being fought—with all the spaces between left void or filled merely with a screen of coloured glass instead of a solid wall of stone.[2] The colour and tones of the glass were a very important feature of the interior effect of a building like this ; and many of our late Gothic churches in England give one to-day an uncomfortable and cheerless impression because the forms of the stonework seem meagre and unsatisfactory in the white light from large windows which have lost their coloured glass, and because these windows themselves show up too clearly as spaces cut out of the wall.

In the pioneer stages of vaulting development the honours were fairly evenly divided between England and France, but the French certainly went furthest in pursuing the science of rib-vaulting to the limits of possibility, and when we look at a building like Beauvais Cathedral we feel that human audacity has here gone as far as it could

[1] L. March Phillipps : *The Works of Man*, p. 176.

[2] Some writers on Gothic building give the impression that the amount of solid stonework was reduced in order to give more scope to the stained-glass artists, who now demanded great clear spaces to fill. But the developments of masonry and stained-glass work probably went hand in hand—the glass workers rising splendidly to the occasion, and taking full advantage of the great opportunities which now came to them.

go without disaster. This—in the case of Beauvais—is very literally true ; for when the thirteenth-century choir had been completed, with a vault higher than any in Europe,[1] and when this vault had fallen down at once and had been reconstructed with the minimum of extra support, the builders (instead of going on with the nave) decided to reach further still towards heaven, and balanced over the crossing a flêche, or small spire, 500 feet high. Their flêche, however, crashed down almost immediately, and the warning seems to have been accepted, for this amazing fragment of a church still stands uncompleted, towering above the roofs of the little town more like a sudden cliff than a building which has been raised, stone by stone, upon the ground.

While the subject of vaulting is fresh in our minds, we may consider one important change which came about as soon as the ribbed vault had been developed. The simple system of vaulting each compartment with two diagonal ribs was elaborated until a whole sheaf of ribs branched out from every capital, each one meeting a rib from the other side. The large triangular web spaces which we spoke of on page 100 became so small, in consequence, that the space between rib and rib could be bridged with a single flat stone, and so one of the last difficulties of building a vault was cleared away.

The point where ribs met was usually emphasized by a stone "boss," often most elaborately carved, and builders began to take an interest in the pattern formed overhead by these bosses and the ribs which joined them. So in later work the underside of the vault becomes covered with a regular network of stone, forming an intricate geometrical pattern. This pattern is helped out by little subsidiary

[1] 160 feet compared with Westminster's 103 feet.

ribs running from boss to boss and not springing from the main shafts at all. Whereas originally every rib marked a change of surface (like the groin which it covered) many of them now become mere ornaments.

Beautiful examples of this stone patterning can be seen at St. George's Chapel, Windsor, at Norwich, Ely, Sherborne, and elsewhere. It reaches its climax in the delicate stone lacework of the fan-vaulting at Christ Church, Oxford, King's College Chapel at Cambridge, and—most glorious of all—Henry the Seventh's Chapel at Westminster.

CHAPTER IX

GOTHIC DEVELOPMENT

SOME of us, when we were very young, used to think that the distinction between Norman and Gothic architecture was that one had round arches and the other pointed arches. There is rather a good parallel to this in the rule which enables us to distinguish between moths and butterflies—viz. that " if they have knobs on the end of their antennæ they're butterflies, and if they haven't they aren't " ! Not that knobbed antennæ are the distinguishing mark of butterflies as opposed to moths, but because it so happens that all the butterflies *which occur in England* have knobs, and none of the moths have them. So any building *in England* which is obviously earlier than the seventeenth century and has round arches may usually be put down as Romanesque ; but the rule breaks down at once even in Scotland, where the round arch was frequently used, as it was also in France, in Gothic buildings.

The pointed arch was not " discovered " in late Norman times ; it was not suggested by the interlacing of round arches, nor by the boughs of the forest (which are also quoted as the origin of vaulting ribs). It was a form which had been in common use in the East for centuries and was employed in the roofing of Celtic stone cells in Scotland and Ireland, and it was adopted in England in the twelfth century to solve a difficulty which worried the early builders of ribbed vaults.

The trouble with semicircular arches was that their height was fixed by the span. So when an oblong compartment had to be vaulted, the two arches forming the long sides

rose higher than the other two ; and even with a square compartment the diagonal arches were inevitably higher than the others. This led to difficulties in putting a tie-beam roof over the vaulting, besides making the construction of the vault itself more difficult owing to the ridges not being horizontal. Sometimes the difficulty was met by " stilting " the lower arches (i.e. making them spring from a point above the actual capital), but the pointed arch, which could be struck to any height required, solved the problem at one stroke. In addition, it was a better arch constructionally, because the steeper an arch is the less sideways thrust it exerts.

It is possible that the pointed arch might not have displaced the round arch quite so completely had it not been for a certain development in ecclesiastical politics, which had an important influence in the change from the late Norman style to the Thirteenth-Century or so-called " Early English."

Nearly all the cathedrals, abbeys, and larger churches in England were founded by some monastic order, and to this day most of our cathedrals (unlike those of France, whose builders were secular) show this by their grouping of cloister, chapter-house, etc., and by their peaceful grassy precincts, all of which are generally lacking in the case of foreign cathedrals. Of the great monastic communities, whose influence and whose possessions extended all over Western Europe, the Benedictine Order was by far the greatest. The Benedictine abbey of Cluny boasted the largest twelfth-century church in Christendom, and exercised more influence in matters of architecture and general culture than any other place except Rome itself. The number of abbeys and churches founded or rebuilt by the Benedictines in England during the century following the Conquest must have been prodigious, and the list includes the cathedrals

of Canterbury, Durham, Winchester, Norwich, Ely, and the huge church of Bury St. Edmunds.

At first the work of the Benedictines was plain and almost undecorated, but by the beginning of the twelfth century the Norman (which we might almost call the Benedictine) style had developed a lavish profusion of ornament, which in some cases is more extravagant than anything seen in England since and almost reminds us of Indian work. This extravagance was typical of the luxury which, with the increase of its wealth and power, had corrupted the order itself; and in an attempt to get back to the original simplicity and austerity of the rule of St. Benedict, a little community was started in the forest of Citeaux, near Dijon. This, under St. Bernard and an English abbot called Stephen Harding, became the great Cistercian Order. By the end of the twelfth century the Cistercians had 800 abbeys; fifty years later the total was 1,800, although in 1152 it had been decided that no more must be founded.

The Cistercians did not entirely escape, latterly, the dangers of wealth and success; but at first all colour and all ornamentation was forbidden. A definite Cistercian style was evolved, with its own distinctive form of plan, and it gradually superseded the elaborate late Norman fashion which was associated with the Benedictines. Capitals shed their surplus foliage and the grotesque beasts and figures which writhed and fought amongst it; and mouldings took the place of sculptured decoration round arches and elsewhere. When we read Bernard's thunderous denunciations of the Benedictine style we realize how close was the connection, in those days, between the outward form of a building and its spiritual significance. "What do you suppose is the object of all this?" he asks, "the repentance of the contrite, or the amazement of the

beholders? The church's walls are resplendent, but the poor are not there . . . the curious find wherewith to amuse themselves, but the wretched find in them no stay for their misery. What has all this imagery to do with monks, with professors of poverty? . . . Again, in the cloisters, what is the meaning of these ridiculous monsters, before the very eyes of the brethren reading there? Such an endless variety of forms appears everywhere that it is more pleasant to read in the stonework than in books, and to spend the day in admiring these oddities than in meditating on the law of God. . . . In God's name," he concludes, "if the silliness of it all does not make you ashamed, the thought of the waste of money might at least check you!"

Without some knowledge of the forces behind this reaction, we might well be puzzled by the dramatic change in form and feeling between the characteristic work of the twelfth century and that of the thirteenth. The thirteenth century in England (as in Western Europe generally) was a very wonderful time. The liberties of the people were established on the foundation of Magna Charta, and our system of law and justice evolved, a benefit which we owe mainly to the wisdom and the labours of Henry the Second, who cut a way through the tangle of Saxon and feudal codes and the pretensions of the churchmen. The coming of better government after the troublous reigns of Richard and John gave the opportunity for a great outburst of enthusiasm for learning and culture. The towns had begun to win their freedom by charter and to develop their own free life, and the general stirring in men's minds was helped by a new knowledge of the world around, brought by traders and travellers, and spread even in remote English villages by country folk who had been called to follow their lords to Syria on the Crusades.

The record of various historical periods seems to suggest that architecture reaches its greatest heights when it gets free from the representation of natural objects and develops the beauty of abstract form and proportion. We may notice this as a characteristic of Greek Doric work and of the simpler Norman building; and it is a notable characteristic, too, of the early thirteenth-century Gothic in England. Once again there are only a very few forms to be employed. The lancet suffices for all windows, occasionally combined with a circle or a quatrefoil: capitals are usually of the plain moulded form, and the only sort of foliage allowed is absolutely conventional. In this foliage, as in the Dog-tooth, which is almost the only enrichment employed, men had once again hit upon a form which—representing nothing in particular, and so not introducing any disturbing reference to worldly matters—was absolutely satisfying as an architectural motif. The great moment, as before with the Greeks and with the Normans, was only fleeting. For a brief space we have put earthliness aside, and we keep our footing on the heights: but the spirit of the age is calling us to see how fair the world is, and the mason (who for a short time had, in spite of himself and without understanding it, become something much greater) realizes that of course the natural ambition of a man is to make his leaves look like real leaves, oak or ivy as the case may be, and that a bird and a mouse or two might be made to play among them; and what about the abbot's coat of arms on that blank piece of wall, or a trail of vineleaves which really mean something, instead of Dog-tooth which doesn't, in the hollow of the string-course? And so we are soon full on the way down to the lavish earthliness of the fourteenth century.

Lincoln Cathedral is the best guide to thirteenth-century

Gothic ; for here, starting with the rich Norman doorways (1150) of the West Front, one can trace the whole unfolding of the style. Salisbury shows us a cathedral completely built, but for the spire, between 1220 and 1284. But it is perhaps in the north (e.g. Beverley, Hexham, or Whitby) that we see the style at its very best. Westminster Abbey was rebuilt from 1245 onwards ; but, as before under Edward the Confessor, it was built in the French manner, and seems to have had little effect on the English development of Gothic.

The next period of English Gothic is sometimes called " Decorated," and this is not altogether an inappropriate nickname for the work of the fourteenth century (or about 1275–1375). For at this time the romance and splendour of the Middle Ages was expressed in building as in every other department of life. It was an age of pageantry. Battles, tournaments, and all the drama of chivalry, were decked out with splendid trappings of all sorts ; and the burghers of the towns, grown rich by trade, introduced just as much magnificence into their public and private life. " Other-worldliness " was rather pushed into the background, and men felt that this world was a very fair place, and life a joyous possession which should be made the most of.

The Church took its full share in the pageant of life, and all the resources of heraldry were employed about the tombs and chantries raised to the memory of the dead, as well as upon the other buildings endowed by the living. We shall see very little austerity, from now onwards, in Gothic work. There is continual experiment with every variety of form in tracery and decoration. Tracery and cusping were first developed in connection with window design, but they soon provided an inexhaustible supply of motifs which could

be used as decoration on every sort of surface. Foliage first imitated nature, producing many a *tour de force* like the "wind-blown leaf" which delighted Ruskin, and then, when it had done all that could be done in this way, degenerated at last into mere shapeless cabbagery. Crockets, formed of crumpled leaves, sprouted along the slopes of pinnacles and canopies, and soon the pinnacles and canopies, crockets and all, were debased to a mere stock-in-trade which could be used to decorate oak stalls, or fonts, or anything else.

All over England we can see splendid buildings of the fourteenth century—churches, houses, bridges, etc.; and it would be absurd to let our enthusiasm for thirteenth-century work make us unappreciative of them. But, in church work especially, there is usually a slight failing in inspiration after about 1300. The first impulse of Gothic feeling had an extraordinary effect, which is very difficult to explain. For in the thirteenth century the work done all over the country seems to show the same spirit, and to reach very nearly the same level of achievement. "The whole body of craftsmen seems to have pressed forward on one line, and inequalities, extravagances, and fallings-behind only appear at the end of the period." Fourteenth- and fifteenth-century Gothic may be good and is often splendid; but it may also be feeble, or coarse, or extravagant or lifeless. The turn of the tide seems to have occurred about the time of the building of the Eleanor Crosses (1290) and the gradual separation of the different crafts, which probably led to something more like modern "shop-work" methods, may have been one of the causes.

* * * * *

We have noticed that in the thirteenth century the lancet form was used for all windows; and when we are told that

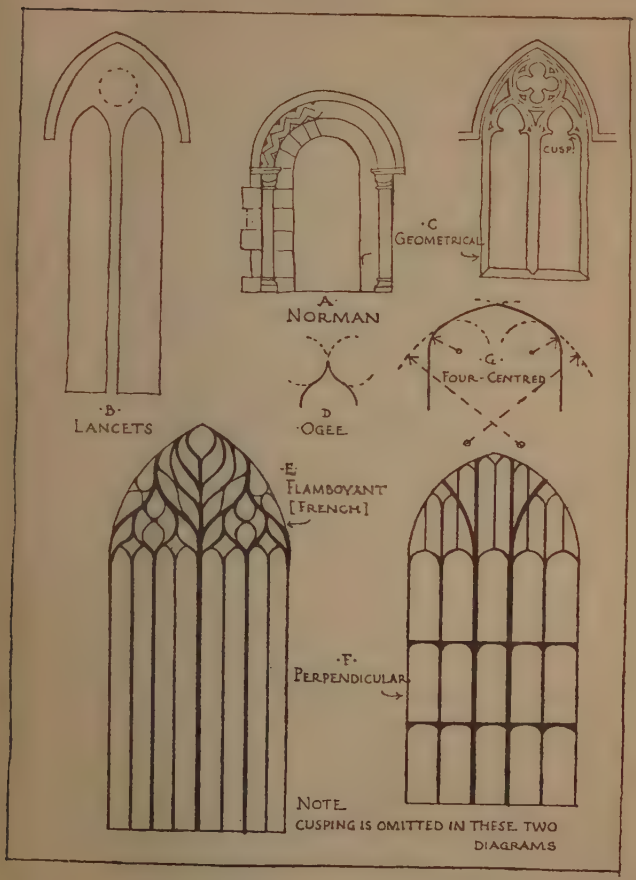


FIG. 19.—Gothic window-development.

the elaborate tracery of the fourteenth century was developed from the lancet, a good deal of explanation seems to be called for.

The first step was the grouping of two lancets under one drip-mould, an arrangement which obviously needed a small circle above to complete the design (Fig. 19, *b*, p. 115). The Normans had got so far, using round arches. This little circle, trefoil, or quatrefoil, was cut out of a thin slab of stone, and the result is called "Plate Tracery." From it we proceed (about 1245) to "Bar Tracery," when the circle settles down on the top of the lancets and is built up of the same stones which form them and the surrounding arch. It is then only a short step on to the design of the ordinary "Geometrical" window (Fig. 19, *c*). The next stage is "Flowing Tracery," which is not found much earlier than 1315. The forms, which seem so free and flowing, are of course still struck from centres, but they are not so obviously geometrical, and the way is now open for an infinite variety of beautiful patterns. Some of the forms which result are a sore trial to the stained-glass artist, who has to work the figure of a saint or angel into a shape which would better fit a lizard or a star-fish; and some of the figures have to slope sideways, while in a rose window it is very difficult to avoid getting them head downwards!

The French developed earlier than we a simple geometrical form consisting of two lancets and a circle, and they were content with this, for general use, for a very long time. They kept to a broad, blunt-headed lancet, which cannot compare in beauty with the long and narrow form found in English thirteenth-century work.

In Fig. 19, *d*, we see how the combination of lancet and circle produced a new arch-shape with a double curve. This is called an "Ogee" arch: it is not found earlie

than 1290 but was exceedingly popular in the fourteenth century, and it is very common in the heads of niches, in canopies, and elsewhere.

Another important development in fourteenth-century windows is the "Flamboyant" type (Fig. 19, *e*), so called because the tracery has a sideways-flickering effect which suggests tongues of flame. Though it was developed in English work it was not much used here. It is one of the features which the French borrowed from us, and they were so enthusiastic about it that it is the chief motive of all later French tracery, spreading also to other countries.

English tracery, at the beginning of the fourteenth century, was about to undergo the most dramatic changes. About 1330 the monks of Gloucester took out the whole end wall of their south transept and replaced it by a screen of the pale, translucent glass which had by this time superseded the rich (and much thicker) glass previously used. Having done this successfully, they remodelled the choir, making one window to fill the whole east end! It is the largest stained-glass window in the world, being 38 feet wide and 72 feet high.[1]

The tracery-forms for a window of this size had to be specially designed for strength; some of the mullions were run right up to the main arch, and horizontal bars or "transoms" were added to stiffen them, owing to their immense length. The result is an entirely new type of tracery, called "Perpendicular" (Fig. 19, *f*), composed of a number of regular oblong panels with cusped heads. A window like this was easy to set out and to build, and it suited the glass-worker splendidly. Nothing like it had ever been seen in the world, and it came dramatically at the end of an epoch. For in 1348, before it was completed,

[1] A full-size lawn-tennis court is 36 feet by 78.

the Black Death swept over the country, leaving behind it a trail of fields lying untilled and half-built churches standing roofless and exposed to wind and weather.

Out of a population of four million, about 1,700,000 people died in one year. If we think calmly about this for a little, we can let our imagination fill in some of the horror which lurks behind such bare statistics as that in Norwich diocese two-thirds of the priests died (not sparing themselves, evidently, but sticking to their posts), and that in Bristol there were scarcely enough people left to bury the dead.

When the plague had passed, the old organization of labour, based on a system of services due by some particular tenant to his landlord, was in ruins. The overbearing attempts of the land-holders to get their work done without paying enormously enhanced wages (which in turn were necessary to meet the rise in prices caused by the general shortage of supplies) led to Peasants' Revolts and what we should now call Communist propaganda, in France and Germany as well as England. Men's minds were stirring, and the first signs could be noted of changes which were to bring the life of the Middle Ages to an end. For while John Ball and Wat Tyler stood for the rights of the peasants against their lords, there was living in his manse at Lutterworth one who was to be known as the first English Protestant—John Wyclif.

Building activity was slowed down for about twenty years or so after the Black Death; but by 1380 at least it was in full swing again, and all over the country we find coming into fashion that "Perpendicular" style whose beginnings we saw at Gloucester a generation earlier. William of Wykeham was building his college at Winchester and the new nave of the Cathedral; at Canterbury, too,

there was a new nave building, and at York the choir, with its great east window nearly as large as the one at Gloucester. But above all, this was a time of church-building, and a large proportion of the churches in our towns belong to the late fourteenth or to the fifteenth century. In spite of industrial troubles, a hundred years of war with France and the thirty years of the Wars of the Roses, the life of the towns went on very prosperously; and this prosperity showed itself in the building of churches, guild-halls, and fine private houses. The same was true of some parts of the country which were especially connected with one branch or another of our export trade. All over Gloucestershire and the Cotswolds we can see the splendid churches built by the rich wool-staplers; and the western counties, from the great port of Bristol southwards, are full of churches belonging to this time. But the most prosperous district of all was East Anglia, which was in close intercourse with Flanders and was continually receiving industrious Flemish settlers, like those who established themselves at the Norfolk village of Worsted and made its name famous by the craft they plied there. As we go about Norfolk and Suffolk almost every village seems to have its huge church, and every church seems to date from this period following the Black Death. The countryside must have been a wonderful sight when all these works were in progress.

Whatever may be the truth about the origins of English Gothic, this Perpendicular style (if we accept the name, and it is at least a convenient one) was our own production. And it never took root outside England at all; the Gothic of France and the Continent continuing on the flowing lines of flamboyancy, with greater and greater elaboration of detail, until the Classical Renaissance set in. We were

the only people who definitely turned the page and started a new and final chapter in the history of Gothic. Perhaps the two characteristics of Perpendicular architecture which strike us most are Light, from the great ranges of windows which by their size led to the change of style, and Regularity or "Straightness," from the vertical and horizontal lines of mullion and transom, which now make a new system of design running all through the building and appearing on the wall surface in the form of panelling as well as in the windows. Arches assume a new shape [1] and seem to be flattened out, though what has really happened is that their haunches have been raised so that they may shut out less light. The thin forms of pillars, vaulting ribs, etc., are made to look even thinner by being scored into lines by rather stringy mouldings. Two or three patterns of stereotyped ornament, such as the Tudor rose, are employed almost universally in certain regular positions.

It often seems as though all *beauty of form* had been lost; for though the whole effect of a building may be fine, we cannot single out any one detail and say "That is beautiful." The lines of the thirteenth-century lancet and of fourteenth-century tracery are a joy to look at, but who would wish to sit and gaze at the ordinary Perpendicular window unless it had good glass in it? Cusping used to produce interesting forms cunningly related one to the other; now it becomes a mere mechanical frilling under the flattened window arch which is itself quite subordinate to the straight line of the transom. And surely no uglier arch-form than the four-centred variety was ever devised before or since.

"But look here," the reader may say, "what about page 91 and page 112, and your theories about 'formula architec-

[1] Called "four-centred" because each side of the arch forms part of *two* circles instead of one (Fig. 19, *g*).

ture.' Haven't we, by your own showing, come to another of these periods when human architecture ought to rise to its greatest heights and so on, having cast away its surplus baggage by getting rid of forms which represent some actual object and reducing itself to one or two conventional shapes ?" Yes, it might very well have happened that, the exuberance of the fourteenth century having exhausted itself, we should come, on these lines, to another period of real greatness. It did not happen, because the impulse was lacking : the fires were low. Great creative work in architecture only seems to appear as the expression of a great age, and the fifteenth century in England was not a great age. It was a time of disruption and the breaking-down of systems. A new spirit was stirring, but had not yet found expression. And so, although many very impressive buildings were produced in various places, the general run of Perpendicular work is dull and mechanical, often coarse and heavy, often weak and ineffective, and often definitely ugly.

Church-building came to an end in England about 1520, but the chapter closes with a list of splendid buildings, all finished in the sixteenth century, which show us very clearly that—dull as the average Perpendicular church had become —there was still a fund of inventiveness and capacity when it was a case of employing the best designers for important work. The list includes the nave of Cirencester Church, Magdalen Tower at Oxford (1505), and a magnificent group of royal chapels—St. George's, Windsor, Eton College Chapel, King's College Chapel, Cambridge, and Henry the Seventh's Chapel at Westminster (1512). Perhaps King's College Chapel shows most clearly what progress had been made in the endeavour to make a church into one immensely lofty and spacious room, with walls of coloured glass, and a ceiling, high and mysterious, in

which the stonework took on something of the quality of lace.

For sheer splendour, the interior of Henry the Seventh's Chapel, with its wonderful roof and the stalls and banners of the Knights of the Bath, can compare with any other interior in the world. It was designed by Robert Vertue, and it is in many ways our supreme example of original and daring construction. "For centuries, builder after builder, to make vault-construction easier, had been compacting more and more ribs into the vaults, till the umbrella, as it were, had become nearly all rib. Then in a moment the whole method of vault-construction which had been elaborated . . . was thrown over. The vaults are put up without any ribs at all!" How this was done, and how the great pendants are hung from transverse arches concealed behind the surface, it would take too long to explain, but it is all admirably described in Francis Bond's fascinating book [1] from which this quotation comes.

Notice another point: the aisles have now no walls at all. Instead, there is a row of tower-like pillars which take the flying-buttresses from the nave, and these pillars are so heavily weighted by enormous pinnacles (see page 102) that they can take the aisle vaults without having further projections, as all Gothic buttresses have had so far. And as there are no walls to govern the line of the aisle-windows, these are not made flat but are delightfully curved and bowed.

No other country showed such originality in constantly developing, by unceasing experiment, every feature of Gothic work. In France the progress of development, climax, and decline, follow one regular course; in England the interest flags and then continually quickens again in

[1] *Westminster Abbey*, Francis Bond.

some new direction. "The story of England is a series of romances," says Professor Prior, "in France the intensity is that of a Greek trilogy."

Unabashed by the height of Beauvais, the magnificence of Bourges, and the colour of Chartres, we can look back with intense pride upon the record of these 350 years of English Gothic.

CHAPTER X

EUROPE AND ISLAM

FRANCE and England may be considered as the two main centres of Gothic development; and the other countries whose work we must glance at are Germany, Spain and Italy.

Germany, from the time of Charlemagne onwards, had been a great centre of Romanesque culture, with a style of building which continued to show a good deal of the original Italian and Byzantine influence but lacked the refinement and vitality of Norman work. When at last the Gothic style was adopted it was borrowed more or less directly from France. Cologne Cathedral is probably the finest Gothic church in Germany, and it is a regular French cathedral, the largest church in Northern Europe, and only a few feet behind Beauvais in the terrific height of its vault. The Germans have always had a genius for technique and craftsmanship, and their work in stone, wood, and metal shows amazing skill and elaboration. They were inclined to let their love of intricate detail run away with them, but this was a common failing in the later part of the Middle Ages. They developed, at any rate, one new idea in church-design which had considerable influence elsewhere.[1] It is a type called the "Hall Church," and appears in the thirteenth century. This type went even further in the direction of producing an open and spacious effect than was done, a century or two later, in England; for it com-

[1] This influence may be recognized by those who have seen the huge Gothic churches of North Italy—barn-like, perhaps, but the most glorious barns in Christendom.

pletely did away with both the triforium and the clerestory, taking the nave arches right up to the underside of the vaulting, with aisles the same height as the nave. By this means an enormous hall was produced, of great width and height, with two arcades in the width of it, and a vast timber roof was often made to cover it in one span. These immense roofs, very steeply pitched, are one of the characteristic features of German buildings—churches, town-halls, and houses alike. Sometimes there are as many storeys in the roof as there are below it, and it then bristles with rows of little dormer windows which get smaller and smaller towards the ridge ; in the case of a house the highest rows merely serve to ventilate a space used for storage or for drying newly-washed linen.

Flanders (i.e. Belgium and Holland) lay between France and Germany and showed influence from both sides. The great characteristic of Flemish architecture, in which it has more in common with Germany than with France, is the magnificence of the town-halls and public buildings. Towns such as Ghent and Antwerp were city-states with their own armies and independent political importance, and the belfry-towers which still rise from the central square of nearly every little town, even as far west as Picardy and Artois, show how vigorous the town-life and town-feeling was in these parts, just as it was in the tiny city-states of Italy. The clanging of the alarm-bell would bring the citizens swarming into the streets from their shops or their firesides, armed and ready to stand up for their rights, whether against some threatening neighbour or some would-be tyrant inside the walls.

In most parts of Flanders the chief building material is brick, and it is very interesting to notice the special character and details which are developed by the use of brick instead

of stone. Elaborately decorated examples of Gothic brickwork can be seen all over Belgium, Holland and the east of France ; and these—as well as the delightful cottages and humbler buildings—are all the more interesting because the same conditions obtained in Norfolk, Suffolk, and Essex (where we find a good many brick churches with elaborate details). All the special characteristics and details of East-Anglian brickwork can be seen in Flanders, and as they do not appear in the other brick-building districts of England we can safely say that they were introduced by the Flemings who came over to settle here.

Spain, like Germany, borrowed its Gothic from France, and developed it on rather florid lines. Probably no other country produced quite such richness and elaboration of detail ; and we may perhaps explain this as being due to the influence of Moorish work even where the decoration is not actually Moorish in character. The Moors (or Arabs) had conquered the whole peninsula by 732, and they were only stopped from over-running France by Charles Martel's victory at Tours. It is strange to think that but for this they might have pushed northwards to the Channel and appeared on the shores of Britain ! As it was, half of Spain was recovered by 1085, but it was another four centuries before the whole country was cleared of them.

The early Gothic churches of Spain are often notable for the dignified simplicity of the architectural forms, the great height of the interiors, and their mysterious dimness. The later buildings have much the same general appearance as the churches of more northern countries, with large traceried windows full of rich glass. This is a great contrast to Italian Gothic, with its tiny windows set in large areas of blank wall. Decoration seems to have been the thing that interested the Spaniards most, and the churches were further

enriched by their furnishings, such as the wonderful screens of wrought iron and towering reredoses in wood or stone, all aglow with colour and gilding. In the South, Spanish Gothic grew up side by side with Arabic work and shows this foreign influence very clearly.

The sudden appearance of the Moslems out of the desert and the immediate success of their whirlwind onset upon a tired world, is one of those fascinating stories about which our history books—taken up with details of Lombard invasions and gossip about Northumbrian royalties—usually tell us nothing. How can we explain the greatness of this man, Mahomet, who in many ways seems so small; this uxorious trader who, after living for forty years in Mecca, the holy city of Arabian idol-worship, becomes so filled with the sense of the purity and one-ness of God, and the equal rights of every man to freedom from cruelty and injustice, that he must be up and doing? In 628 his strange message reaches the great ones of the earth—Heraclius, Emperor of Byzantium; the King of Kings, Khavadh the Persian; the Son of Heaven, Tai-tsung, Emperor of China—bidding them submit themselves to the one true God, who had sent this word by Mahomet His prophet. Tai-tsung alone gave audience to the Moslem teachers, and let them build a mosque for the Arab traders at Canton, which stands to this day.

Mahomet conquered Arabia and died: Abu Bekr, "the Successor" (*Kalifa*), set out to conquer the world. The legions of Heraclius were gradually swept from Syria, and the Persian kingdom went down at a sudden blow (637).

As we follow the story, it is difficult to remember that eleven hundred years have passed since another King of Kings, Xerxes, sat throned "on a rocky brow that looked o'er sea-girt Salamis"; for once more we read of a King

of Kings seated high on a golden throne, to watch the three-days battle at Kadessia. His thirty-three elephants (after the usual manner of elephants in ancient history) finally decided the issue—by becoming unmanageable and carrying panic and disaster into the Persian ranks. The golden throne was cast down, and all Persia fell to the Moslems.

So the tide of conquest swept on, reaching in the north the Khirgiz lands beyond Khiva ; in the east Hyderabad ; and on the west engulfing Egypt, North Africa, and Spain. In what was for European culture a time of troubled twilight, the life of the Moslem countries was comparatively enlightened ; though the " Paynim Moor," seen by Christendom in general through the eyes of the Church, was usually talked of as a mere heathen savage. And the presence of the Arabs in Spain must have had a great effect on European life and thought. For here were men of learning, refined taste, and high ethical standards, with some obvious virtues which Christians often lacked, living happily and successfully outside the Catholic system which was supposed to be the essential foundation of civilized life ; and this set men thinking about the claims of the Church, and questioning for themselves the ordinary medieval outlook upon the universe.

How far Western architectural ideas were directly influenced by Eastern work is a point upon which authorities will never agree. It seems quite possible that the idea of trefoil and cusped arches arose out of the many-lobed (or " multifoil ") arches used by the Arabs ; and familiarity with the form of the pointed arch in Eastern buildings may conceivably have helped to encourage people to use it elsewhere. But the influence of Eastern decoration was certainly much greater. Besides having a genius for colour (shown by the splendid tiles used as a lining for walls and even as

a covering for domes), the Arab excelled in devising intricate patterns and decoration of all sorts. And the influence of these "arabesques" on Western ornament went on for centuries, being spread especially by the continual traffic in Eastern stuffs and embroideries, which are constantly mentioned even in the inventories of English parish churches.

But there was another side to the Arab temperament, an inherent weakness which comes out in his architecture. His passionate energy made him irresistible, but once the force of his impulse was spent there was no solid tenacity of purpose behind to keep him going. The Westerner, as opposed to the Oriental, is a practical success because he is in the main governed by reason and not by impulse. He has thought out his plan of action and so has something to stick to, even through discouragement and apparent failure. When he builds, his buildings are rational, too : their forms are dictated by their purpose, and the shape of everything about them is arrived at on logical principles. A column, for instance, must not only be strong enough to carry its load ; it must *look* strong enough. And we make it slightly wider at the bottom, or give it a broad base, to help this appearance of stability. But the Oriental does not accept reason as a guide ; other things, such as faith and tradition, are far more important to him. And he cannot see why the forms he uses in his buildings should bear any relation to their function ; on the contrary, he usually prefers that they should not ! The contemplative Hindu quite happily makes his columns diminish towards the bottom, and then stands them on a stone globe or a tortoise. So to us his buildings often appear to be a jumble of meaningless form —the architecture of a nightmare.

The Arabs burst on the world with no plan of action and no organization. They had no architectural style of their

own, but wherever they settled they improvised something out of what they found to hand. For the most part this was Roman and Byzantine work, of a reposeful solidity which was absolutely opposed to the desert temperament, and under the Arab impact the Romanesque and Byzantine styles underwent a strange transformation. "Those solid and serene forms [vaults and arches] in their grave march through the centuries seem, as they enter the Arab epoch, to be seized upon by a force of an unprecedented kind, under the attack of which they buckle and bend in all directions like a child's toys." [1] Everything takes on an appearance of instability. The arches seem to give way at the foot, and assume a horse-shoe shape. Often they become "multifoil" and lose the arch formation altogether. The columns and capitals are generally Roman ones re-used, cut down or pieced out to fit in somehow, and there is a general effect of makeshift, which is often increased by a clumsy system of wooden ties across the arches. The mortar and the masonry generally have been described as "the worst ever used by other than downright savages." Moorish decoration is splendid, but there is everywhere a lack of restraint, and elaboration takes the place of reasoned design. The Great Mosque at Cordova, for instance, shows the plan of a Roman basilica exaggerated to absurdity; for it consists of eighteen parallel aisles of thirty-three bays each —a monotonous waste of columns with fantastic arches growing one out of the other.

If we would understand and appreciate these buildings and the ideals of the men who planned them, we must lay aside the strict standards of Western criticism and yield ourselves to the sensuous charm of form, surface, and colour. "They seem to have been built for a momentary enjoyment, and

[1] L. March Phillipps: *The Works of Man.*

in accordance with a momentary caprice," and they have the qualities of buildings in a stage setting or a fairy story. The courts of the Alhambra at Granada, so long as they can be kept from falling into absolute ruin, will always have power to take us back to the romance of the *Arabian Nights*, with nightingales singing in fairy gardens of roses and tall cypresses, and fountains splashing in the moonlight under balconies of fretted marble.

CHAPTER XI

ITALY AND THE RENAISSANCE

AS they are passed on down the centuries, words and their meanings meet with the strangest adventures. Titles of honour become terms of abuse, while other words become honourable which started by being scurrilous. One family of barbarians on the fringe of the Roman Empire called themselves "Slavs,"—that is, "The Glorious Ones"; but so many were captured in war that their name came to mean a prisoner and a servant, and gave us the word "slave." The term "Gothic," on the other hand, which has come to suggest rich beauty of form and skilled craftsmanship, started as a term of contempt, applied by the cultured Italians of the Renaissance to a style which they considered typical of northern barbarians and lacking in the scholarly qualities of symmetry and balanced proportion.[1]

Certainly the Gothic style never found much favour in Italy; the influence of Rome was too potent. Remains of Roman work were everywhere, and these fragments were re-used in Romanesque times by masons who naturally tried to imitate the capitals and other details, in order to complete their patchwork buildings. Quite a high standard of craftsmanship seems to have survived through the Dark Ages—unlike what happened in England—and the Classical forms held their ground most stubbornly. Even in eleventh- and twelfth-century work one finds Roman details such as Corinthian capitals and ornament—"bead and reel," "egg and dart," and the rest—cut with such

[1] See Vasari's remarks quoted on page 138.

refinement that the workmanship might quite well be Roman instead of Romanesque. It is rather humiliating for the enthusiastic tourist, who in England thinks he can at least date a building within a hundred years, to come to Italy and find that he can't say offhand whether the building he is looking at is Roman or Romanesque or Renaissance—in fact that he may be a thousand years out in his reckoning. But this is quite a possible predicament.

Italy, of course, was never one country, any more than South America is one country, until about sixty years ago ; and the various parts differ from each other far more than do, for instance, the different parts of Great Britain. In the Middle Ages, one state lived a life of its own so separate from the rest that it might develop quite a distinctive architectural manner without much influencing its neighbours : in fact, as it was generally at war with them, any special characteristics that belonged to it would probably be distinctly unpopular elsewhere. Florence, in the fourteenth and fifteenth centuries, had a school of painters whose style and ideas have influenced the whole of Europe ; but while the splendour of Florence was at its height the little town of Siena, 30 miles away among the Tuscan hills, continued to pursue its own way in painting and fresco, following an entirely different line of tradition.

There was a great deal of variety, too, about the building materials which were available in different parts of the country, and as the style that men develop must always depend upon the material they have to build with, so long as that material is used in an honest and straightforward manner, this produced a variety of local styles.

In the north of Italy, at the foot of the Alps, the vast

plain of Lombardy [1] stretches from the west coast almost to the east, with a clay soil suitable for brick-making. And with bricks as their material the builders of Romanesque times produced what we call the Lombardic style. It was really a continuation of Roman brick-building and very much like the style used by the Byzantines when they built their brick churches at Ravenna, in the marshland where the great plain meets the Adriatic. Brick-building naturally leads to simple shapes. The large expanses of plain wall surface were broken up on the outside by flat buttress-strips such as the Romans and our own early Normans used, and by small round-headed windows. And under the eaves of the roof (low-pitched and tiled, in the Roman manner) a row of arched corbels joined the head of one buttress and the next (Fig. 13, p. 70). Modern churches built in this style are fairly common nowadays in London and in other English towns, for the cheapest materials can be used and there is no need of expensive detail such as tracery and carved decoration. The dignity and effect of the building must depend on its proportions alone.

This was the style out of which Italian Gothic grew, producing the Cathedral at Florence and Giotto's tower, Santa Croce and the other Florentine brick churches; the Frari and other churches in Venice; and the Cathedral at Siena (but not Milan Cathedral, for that is an outlying piece of German Gothic adapted to its foreign surroundings). And really the style remained essentially Italian, with only a flavouring of Gothic. For can a style really be called Gothic which retains the Roman principle of

[1] The Lombards ("Long-Beards") were invaders who settled in Italy in the sixth century. In the Middle Ages the Lombard traders were the bankers of Europe and had many branches in England, their London headquarters being in Lombard Street.

meeting thrusts by solid wall thickness instead of localizing them and countering thrust by thrust; a style of flat wall surfaces and roofs set so low that they are usually invisible; which never developed tracery beyond the simplest geometrical stages, and which went on using Classical forms and decoration with very little modification or change of feeling? But, Gothic or not, this Italian style is often very beautiful, and some of the plain stone and brick churches have an austere impressiveness quite without parallel. They convey a wonderful feeling of height, produced by the lines of the buttress-strips, carried up right from the ground to the eaves without a break, and by the tall proportion of the windows; and no other style affords so much plain wall surface, which was wanted inside for frescoed decoration—a Bible picture-book for the unlearned. In Florence, Pisa, and Siena, many of the buildings are entirely carried out in coloured marble, and this introduces a new characteristic which seems to remove them further still from Northern Gothic. For instead of the wall-surface being broken up by architectural forms such as projecting buttresses, etc., the divisions were formed on the flat surface by designs and patterns worked out in colour. For the most part, panels were outlined by bands or strips of dark green on white, and a pale salmon-pink marble used sparingly beside the white (as on Giotto's tower) gave it a delightful warm flush.

The influence of the Gothic impulse took some time to reach Italy, and most of the famous Italian buildings in this style were only started towards the end of the thirteenth century.[1] Before this, the Italian cities were very unpretentious, though formidable in appearance by reason of the tall square towers with which they bristled in all directions.

[1] San Francesco at Assisi, probably built by a Frenchman and finished about 1253, was the first Gothic church in Italy.

Every important family had a tower to defend its house, and in Bologna there were nearly two hundred! People's time was taken up with continual party-feuds, accompanied by much slaughtering and driving into exile, which makes the history of this period tedious and depressing to read. But after the thirteenth century the citizens began to adorn their streets with noble buildings, and once this city-pride was kindled it became a consuming enthusiasm which persisted even through feuds and civil war.

The age of Italian Gothic lasted in Florence till about 1420, when the new Renaissance style evolved by Brunelleschi superseded it completely. But Venice sat apart on the Adriatic, and, having constant sea-traffic with Byzantium and the East, produced a Gothic style of her own in which the glowing colours of Byzantine marble-work and the fantastic lightness and magnificence of the Arab styles both had their share. The churches kept much of their Lombardic austerity, but the merchants' palaces which lined the canals, and the public buildings designed to advertise to all comers the power and opulence of the Republic, were in this new style, which held its ground long after the rest of Italy had turned again to the inspiration of Rome. The Doge's Palace was only built about 1440; and here again we have the architecture of a dream realized in marble. Perhaps it is all wrong by architectural rules; certainly the columns of the lower arcade have no bases, and the whole design is topsy-turvy, the great weight of the upper wall-expanse (so charmingly diapered in pale pink marble) standing upon a delicate screen of white tracery in two storeys. But if ever there was architecture made for delight, here it is. Anyone who can see the Doge's Palace and the Ca d'Oro in brilliant sunshine or by moonlight and preserve an attitude of conscientious disapproval, had

better forswear foreign travel and devote himself to an intensive study of the waiting-rooms at English railway-junctions. But let the rest of us, happier if less wise, remember with gratitude the names of Giovanni and Bartolomeo Buono, natives of Bergamo, whose genius conceived the loveliness of these two delightful buildings.

When the eventful fifteenth century opened at Florence, all was ready for the turning of a new leaf. The Gothic impulse had run its course, and there were many signs that Italian craftsmen were beginning to find its forms cramping and uncongenial. Sculpture, particularly, began to show a Classical feeling. Even as early as 1260, Niccola, the sculptor of the pulpit in the Baptistery at Pisa, had based the grouping of his scenes on the reliefs of a Roman sarcophagus which is still preserved, near by, in the cloister of the Campo Santo. And there is a decidedly Classical atmosphere about the carvings which Giotto put around his tower at Florence early in the fourteenth century. But that was as far as things had gone; for it was only decorative details that showed the influence of Roman remains, while the actual form and structure of Classical buildings had apparently never aroused the slightest interest. The story of the Italian Renaissance falls into two chapters. One is "The Revival of Learning," but before that comes "The Discovery of the Old World"; and in its bearing on architecture, the hero of the first chapter is Filippo Brunelleschi.

Brunelleschi was born in 1377. He began his training, like so many artists of his time, by being apprenticed to a goldsmith; for in those days the present distinction between jewellers, painters, sculptors and architects hardly existed. Art (in its widest sense) was the natural study for anyone with a scientific turn of mind, and so we find that painters, besides being sculptors and architects and goldsmiths,

were often engineers as well. They designed machinery and planned fortresses, besides carrying out practical scientific research in subjects like perspective, which have long ago been reduced, for us, to matters of formula. Young Brunelleschi practised various crafts, and principally sculpture ; but his real genius lay in the direction of mathematics and mechanics. He was just twenty-three when something occurred which changed his career and which was also perhaps the most important event in the history of European architecture. This was the famous competition, in the year 1400, for the design of bronze doors for the Baptistery at Florence. Brunelleschi competed, and was so narrowly beaten by Ghiberti that he was asked to collaborate with him. But it was not his intention to be second to anybody ; so he decided to give up sculpture and specialize in architecture. He sold a little farm at Settignano which belonged to him, and furnished, thereby with the necessary cash, set out for Rome. He was accompanied by Donatello, his greatest friend and afterwards one of the world's greatest sculptors, who was then only sixteen.

There was a very clear purpose in Brunelleschi's mind, which was, as Vasari (1568) says, " to restore to light the good manner in architecture, which was then extinct I mean the good old manner and not the Gothic and barbarous one which was much practised at that time. For the men of those times had badly expended great treasures in the erection of buildings without order, constructed in a wretched manner after deplorable designs, with fantastic inventions, laboured graces, and worse decorations.' Brunelleschi would probably not have expressed himself quite so forcibly as this, but he had realized that architecture in Italy had reached an *impasse*, and he alone had conceived the idea of rediscovering the secrets of classical work and

The Springtime of the Renaissance : Pazzi Chapel, Florence (Brunelleschi, 1420)

so giving it a fresh start in an entirely new direction. His journey was a real voyage of discovery, the discovery of the Old World which had been so completely lost. For though Rome was still full of ancient buildings, yet no one knew or noticed them. People had got so used to them that they really did not see them; the buildings were part of the landscape, like the hills and the trees, and seemed to have just about as much bearing on life and its problems. Imagine, then, the thrill with which these two boys—the only people with eyes, in a country of the blind—came upon the treasure-city which surpassed their wildest dreams. "Filippo, when he beheld the magnificence of the buildings, stood like one amazed and seemed to have lost his wits"; and, scarcely stopping to eat or sleep, the two of them examined, measured, and drew, every fine piece of Roman work they could find. Often it really was a matter of finding, and they had to employ workmen to dig down and clear away accumulations of soil, sometimes breaking through into the chambers of a temple or baths which had been lost for centuries. When their capital ran out they earned money by working for goldsmiths and so were able to carry on. People decided that they must be mad, or, if sane, engaged in hunting for buried treasure.

Brunelleschi had all the time a second very definite purpose in mind, but he never breathed a word of it even to Donatello. The cathedral at Florence still stood unfinished because no one knew how to roof the huge octagon, 138 feet broad, which Arnolfo had planned at the crossing of the nave and transepts. So it had stood for fifty years, a continual reproach to the Florentines, and Brunelleschi was determined to find a solution. While he was in Rome he studied every ancient dome and vault, the method of laying and jointing the stones, and every detail bearing on

the problem ; and he came back, after four years, in time to take part in a conference on the subject. He took part in a great many others as well, because for thirteen years the authorities went on talking and examining schemes and models put forward by architects of various nationalities. The thought of the immense weight to be raised in the air, and the expense and difficulty of putting up centering for the dome, filled them with absolute panic. And their advisers brought them little comfort. One man suggested that, instead of centering, a vast mound of earth should be raised and the dome built on this, coins being mixed in the earth so that people might be persuaded, at the end, to remove the earth for the sake of the money ! There was only one person who had a definite scheme to suggest and was perfectly confident of success, and that was Brunelleschi —who, apparently, was mad. For, instead of trying to keep the dome light, he proposed to increase its weight by making it in two shells with massive buttresses to join them : the height was to be increased by raising the dome on a drum ; and as for centering, he said he could do without it !

But there was no resisting this impetuous little man who " talked as though he had built twenty cupolas," and who had in his mind a scheme worked out to the last detail ; and of course he had his way in the end. And he was as good as his word. Vasari's picture of him directing the whole enterprise shows us the perfect architect, equal to every emergency, ready with a solution for every problem ; inventing machinery for hoisting stones, teaching the masons how to shape and joint them, explaining difficult points " with models in wood or wax or hastily cut on the spot from turnips." " There was no operation, however difficult, which he did not render easy." His dome, with

its silvery-white ribs and its roof of orange tiles, is worthy of its position as the crown of Florence, and apart from its immense size [1] it made history in many ways. It was the first dome built in two skins and the first to be raised on a drum, an idea which has been copied in almost all domes which have been built since.

Brunelleschi, however, is chiefly important not because he designed the most beautiful dome in the world but because he introduced a new style of architecture. And there is really nothing like this, before or after, in architectural history—that a new manner of design should come suddenly into existence as the conception of one man; for we are continually told that each new style comes about not by invention but naturally and by a process of gradual evolution. Of course Brunelleschi's style had its origins, but he was no copyist. He did not "restore the good old (Classic) manner"; instead, he did something far greater. Even his dome was not (after all his study of Roman work) constructed on Roman methods, for its principles were the use of ribs and the pointed arch; and his buildings generally are scarcely more like Roman work than they are like Italian Gothic. Much of the detail can be traced to Roman sources, but the design and the general atmosphere of the whole is something absolutely new. Nothing could be more original or delightful than the little Pazzi Chapel at Florence, which is one of the very first Renaissance buildings.

In his interiors Brunelleschi used plain white-plastered wall surfaces with columns, arches, and bands, of cool grey stone. None of his churches are frescoed, but a delightful note of colour is introduced by roundels and friezes of

[1] It is 138 feet in diameter: St. Paul's dome only 102. St. Peter's is 137, and that of the Pantheon 142.

Della Robbia ware with white figures (such as the swaddled Bambini on the Loggia of the Innocenti) on a blue ground ; and the ornament and enrichments of his doorways and other details are the first steps in a style which produced the beautiful pulpits and tombs, which make the churches of Florence into treasure-houses. The patterns of scrollwork and foliage are inspired by late Roman work (which three centuries after this was again to provide inspiration for our own " Adam " style) ; and once Brunelleschi and Donatello had shown the way, the fertile imagination of an eager following of craftsmen did the rest. Now at last they had a style in which all the crafts—bronze-work, sculpture, stone-carving, glazed ware, woodwork, and stained glass —could freely express themselves ; far more freely than could ever have been the case in a mere revival of the Classical Roman style with its stereotyped form and decoration.

The early period of the Italian Renaissance produced another splendid type of building, which has been copied and adapted ever since—the Florentine palace or town house. Town life in Tuscany was a turbulent affair, and the houses had to be built like fortresses. In the fourteenth century the typical form was a high square pile with a tower or two, built as the ancient Etruscans had built their walls, with enormous blocks of hewn stone. The stones were not worked to a flat face, but some were left rough, projecting in front of the main surface of the wall, and this strange fashion gave an impressive effect of ruggedness and strength. The wall of the Palazzo Vecchio at Florence, when one stands close to it in a narrow side street, seems to tower above one's head more like the face of a cliff than part of a building raised by man.

But by the middle of the fifteenth century the great families of the city wanted something rather less rude and shape-

The Riccardi (or Medici) Palace, Florence

less ; a palace which would still be an impregnable castle, but which would also express something of the ordered dignity, the culture, and the urbane spirit which had now come into their life. Such buildings as the Strozzi or the Riccardi Palace (the town house of the Medici) were the result. There is more definite design about these houses : the masonry is still rugged, but the projecting stone faces are shaped, and their roughness is graduated in the three storeys which divide the height. The lowest storey has boldly projecting masonry ; in the next the stones merely have bold and deeply-sunk joints, and in the third the surface is more or less normal. Any windows that occur in the lowest storey are kept high and heavily barred, and there is usually one large doorway leading into the inner courtyard. Along the base of the wall, on the street front, runs a broad stone bench, where the armed followers lounged in the sun ; and fixed in the stone above we can see the rings to which they tied their horses, elaborate wrought-iron sockets for torches, and others for the banners which were displayed all along the palace front on great occasions.

A very important feature of these palaces is the enormous stone cornice which finishes off the façade, very Roman in form but deeper and bolder than any cornice that was ever seen before. The early palaces show practically no other architectural detail, but the whole effect of size and grand scale is overwhelming. They give a far greater impression of power and magnificence than the most ambitious and lavishly decorated palaces which have been built before or since. The later Italian palaces, especially in Rome and Venice, have much more architectural enrichment, with pilasters along the walls and balconies and pediments to the windows ; and we can easily see that they have inspired our ordinary modern buildings in

the cosmopolitan Renaissance style which has now spread all over the world. The bold Florentine method of dressing stones (called " rustication "), and the exaggeration of the jointing, are still constantly used, especially on the corners of buildings and for the lower storeys and plinths, to give an impression of strength.

While the Italian builders and craftsmen were finding a new style the scholars were also engaged in discovery, and Latin and Greek books were being eagerly translated, explained, copied, and distributed. Very few people at that time had had any chance of learning Greek, but when the Turks in 1453 at last succeeded in taking Constantinople and making an end of the tottering Byzantine Empire, homeless Greek scholars were dispersed all over Europe and were gladly welcomed at the different universities. The Popes, and the various rulers all over Italy, played an important part in encouraging both the revival of learning and the re-birth of art; and the Medici of Florence were the most splendid of all these patrons. This family were international bankers, and not doctors as one might imagine from their name, though their coat of arms with its three pills preserved the memory of an original medical ancestor.[1] They were immensely wealthy, and the first two Medici were generous patrons of Brunelleschi. Lorenzo di Medici, called The Magnificent, who became virtual ruler of Florence in 1469, is the very personification of the Renaissance spirit. His outlook on life was frankly pagan, but he lived splendidly and joyously, and his keenness for sports and pageants and music and merry companionship was only one side of his character. Besides all this, he was a brilliant

[1] They are said to have established the first pawnshops, and their coat of arms, hung up outside, has become the Three Golden Balls which mark pawnshops to this day

statesman and a man of wide culture, whose poems and other writings would have made a name for him even if he had not been a prince. He gathered round him the most distinguished scholars and philosophers of the time, established schools of all sorts, and among other things set up the first Florentine printing-press. He also made a collection of ancient sculpture for Florentine artists to study, and here the young Michelangelo worked, showing such promise that Lorenzo adopted him and took him into his own house.

This latter part of the fifteenth century saw the Italian Renaissance at its high-water mark ; and there was probably never any time in any country when life was so splendid, so full of zest and achievement. " Bliss was it in that dawn to be alive, but to be young was very Heaven ! " The present moment was everything, for all around men were doing things that had never yet been done, or doing them better than they had ever been done before. In painting, for instance, sixty-five years—1450 to 1515—bridge the gap, which seems like one of centuries, between Gentile da Fabriano's Madonna in the National Gallery and Raphael's Madonna del Granduca. When life was so exciting, and moved at such a pace, it was no wonder that it went to men's heads like wine, for the earth produced supermen and their achievements seemed to be more than human. We have seen in Brunelleschi one instance of sublime self-confidence : here is another in a letter from Leonardo da Vinci, offering his services to Ludovico Sforza, Duke of Milan. After recounting some of his qualifications as a military engineer, in bridge-building, the making of " bombs, mortar-pieces, and light field-guns," sapping and mining, etc., he concludes : " I believe I may say that in times of peace I may vie with anyone in architecture, in

the erection of public as well as private buildings, and also in making aqueducts from one place to another. In works of marble, bronze and terra-cotta, as well as in painting, I shall do whatever can be done by anyone whosoever he may be. And if any of the aforesaid things appear impossible and impracticable to anyone, I am ready and most willing to make the experiment in your park or in any other place agreeable to Your Excellency, to whom I recommend myself with the utmost devotion." Even this does less than justice to Leonardo's versatility; for he was an able musician, he has been called the originator of hydraulics, he wrote a book on anatomy, he was the first to study the laws governing the movement of waves and to apply them to sound, and he experimented with the design of a flying machine and a boat which was to be propelled by steam! Painting occupied so little of his time that there are only eight pictures left which we can attribute to him with certainty.

In their impetuous enthusiasm for classical ideas the people of the Renaissance were led on to admire and imitate many things unintelligently, simply because they were old. In the fourteenth century, writers like Dante and Petrarch had first created great literature in the common language of the day, as Chaucer did in England; but a century later, the man who wanted to write history set himself to copy Livy's style, in Latin, and the poet also wrestled with a strange language and metre. And we see the same tendency in architecture, becoming more and more pronounced as time goes on. Buildings are plastered with Roman forms which serve no purpose whatever except adornment. The whole paraphernalia of the Orders is borrowed: columns and pilasters appear on the front of buildings and pediments over the windows. Something of the

freshness and originality of the earlier work has been lost, though well on into the sixteenth century there were many splendid buildings produced by such men as Bramante (at Rome and Milan), Sangallo, designer of the Farnese Palace at Rome, Sanmicheli at Verona, and others ; and many of the faults of this later work were due to misdirected enthusiasm.

Among the classical books which had survived until this time there was only one treatise on Architecture. And, as luck would have it, this was a ten-volume work by a man called Vitruvius, a thoroughly bad architect of the time of Augustus. Among other things, he dealt with the four Roman Orders in all their details and gave rules for settling the exact proportions of every part—just the sort of rules by which the Romans, after borrowing the Orders from the Greeks, had vulgarized them and reduced them to a dull and mechanical system. But the architects of the sixteenth century adopted his book as their canon of Holy Writ, and accepted his authority slavishly, even to the extent of condemning automatically any classical building, however fine, whose proportions did not agree with the rules of Vitruvius ! This was one of the reasons why Italian Renaissance architecture gradually lost its vitality, and unfortunately, as it took some time for Italian influence to spread abroad, it was the more artificial and pedantic sixteenth-century work which was most copied in foreign countries, and especially in England.

CHAPTER XII

TUDOR AND JACOBEAN

WHEN we read about architectural history we cannot help noticing how, at different periods, different classes of buildings claim our attention. In the case of Egypt the record is concerned with temples and tombs; in Greece, mainly with temples. With Rome, the chief interest shifts to great public buildings and what we now call "public works." Then for many centuries all the important buildings—except the feudal castles—seem to be connected with the religious life. But in England this stage comes to a sudden end with Henry the Eighth, and in the sixteenth and seventeenth centuries our interest is focussed, for the first time, on the building of houses. For in these two centuries we can watch the gradual bridging of the gap between the incredibly uncomfortable buildings in which people lived throughout the Middle Ages and the sort of houses we live in to-day.

When we reach the reign of Henry the Eighth, we seem to have got some way on towards modern times, and it is therefore rather hard to realize how uncomfortable houses were even in his day. To take just one detail: glass windows were still so uncommon that they were not a part of the landlord's fixtures at all. The glass was usually made up in small wooden frames which belonged to the tenant, and he took them away when he moved. Instead of glass, people in the Middle Ages had to use wooden shutters (which probably meant that in cold weather they did without daylight altogether), or screens of linen dipped in oil, which admitted a feeble glimmer of light but did not let

anyone see out. And, knowing how difficult it sometimes is, even with modern windows, to keep out wet and draughts, we can imagine how easily they found their way through the chinks of these shutters. The word "window" itself suggests this, for it means "wind eye." The sturdy Anglo-Saxons took the draught for granted and simply talked of an "eye-hole" or "eye-door" (i.e. something to look out of), and perhaps the new word, coming in after the Conquest, shows that people had really begun to notice such things and to expect a little comfort in their houses.

There were several reasons why house-planning should begin to improve about the end of the fifteenth century,[1] the chief perhaps being that it was at last possible to build a house which had not also to serve as a fortress. Life was rather more secure and peaceful than it had been; and in any case, now that gunpowder had come into use, it was hopeless to try to defend an ordinary building as one could in the days of arrows and battering-rams.

The original of the ordinary type of house built in England all through the Middle Ages was probably introduced by the Northmen, for it is like the houses which their sagas describe (Fig. 20, p. 150). The main feature was the Hall or Fire-house, which was the general living-room and feeding-place, and also served as a sleeping-place for the men. At one end was the kitchen, with the women's quarters (called the Bower) above. At the other end there was usually a store, and above it the Solar, where the master and his family slept, with a little window from which he could look down into the hall. These upper rooms were reached by outside stairs. The hall itself had a fire in the centre, with a lath-

[1] At present we are only thinking of the houses of the gentry, for the houses of the lower classes showed little improvement until long after this.

and-plaster canopy taking the smoke (or some of it) up into a louvred [1] turret. At the top end, next the Solar, the floor was raised to form a dais on which the " high table " stood, and the tables for retainers were ranged lengthwise down the body of the hall. At the far end, doors led to the kitchen quarters, the " Pantry " (where bread was kept), the " Buttery " (or bottlery), and the Larder. At this lower end of the hall there was a door in each side wall leading to the open air : but when anyone opened one of these doors the draught was liable to blow the fire all about

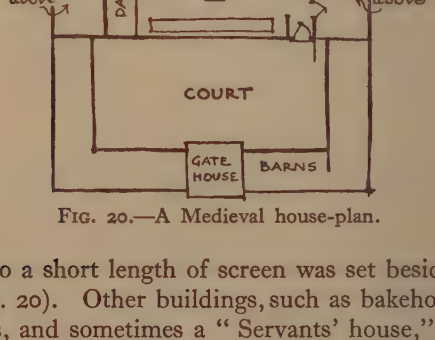


FIG. 20.—A Medieval house-plan.

the hall, so a short length of screen was set beside each of them (Fig. 20). Other buildings, such as bakehouse, barns and stores, and sometimes a " Servants' house," might be built out as wings at each end of the main block, and very often these wings were connected by another range of buildings (or simply by a wall) with a gatehouse in the middle, so as to form an enclosed courtyard. For reasons of defence all the windows had to face on to this courtyard,

[1] Louvres are wood boards arranged, for purposes of ventilation, somewhat on the principle of the overlapping slats of Venetian blinds.

and the rooms got little sun. The outside walls had only narrow slits for shooting through, and when the whole place was surrounded by a moat, with a drawbridge at the gatehouse, it made a very good little fortress—even if, as a residence, it left something to be desired.

One of the first improvements was to provide a separate sleeping-room for the family. The Solar became merely a sitting-room or Parlour ("talking-place"), and it was often put on the ground floor, opening from the dais, with the bedroom or bedrooms above it. Then the Hall itself was improved in various ways (Fig. 21). A great bay window was thrown out, on the courtyard side of the dais,

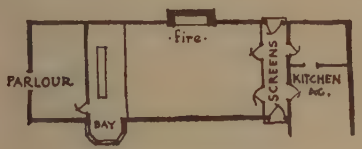


FIG. 21.—A Tudor hall.

which provided a useful recess for private conversation and also gave room for a sideboard or serving-table. The fire was moved and was built against a side wall, which left the floor space free and made it easier to collect the smoke, but probably did not warm the Hall nearly so well as the old arrangement. And at the far end a third screen was put between the others, leaving two openings, which at first had curtains to draw across them and later on were closed by doors. The Hall was now completely shut off from the outer doors by a continuous partition, and the passage space which was left between this and the old end wall was called "The Screens"—the name preserving the memory of the short pieces out of which the single partition

had grown. But this partition was not very high, and when the outside door was open the cold blasts still blew in over the top of it. To continue it right up to the underside of the Hall roof would have been rather difficult, because it was only a light wooden (panelled) screen ; but the problem was solved by putting a low ceiling over the " Screens " passage, and this formed a sort of broad shelf, open to the Hall, which became the Minstrels' Gallery.

And now we have reached the fully-developed Tudor hall exactly as we can see it in the colleges at Oxford and Cambridge, in London at the halls of City Companies or the Inns of Court, and in old houses all about the country. The colleges were built on the same lines as an ordinary Tudor house, and they show very clearly the regular arrangement of the hall, courtyard or quadrangle, and gatehouse.

Fires in the middle of the Hall went on in some cases until the end of the fifteenth century [1] and it was only in the fifteen-hundreds that chimney-stacks began to appear instead of louvred turrets, and flues or pipes in the walls instead of mantels or projecting canopies. A writer describing Bolton Castle in 1538 says, " one thinge I muche notyd in the haulle of Bolton, how chimneys (i.e. flues ; passages for smoke) were convayed by tunnells made on the syds of the wauls . . . and by this means and by no covers (i.e. canopies) is the smoke of the harthe wonder strangely convayed."

At first each flue was taken up separately above the roof, which explains the delightful clustered chimney-stacks of Tudor and Jacobean houses, often built (as at Hampton Court) with twisted shafts of moulded brick. About the time of Charles the First people discovered that flues

[1] This was the arrangement even in Henry the Seventh's new palace at Richmond, built in 1499.

draw better if they are kept warm and dry, so that it is an advantage to get them close together ; and from that time onwards they were combined into a rectangular stack as they are nowadays.

There was a great burst of house-building in the reigns of Henry the Eighth and Elizabeth. Henry became a multi-millionaire by dissolving the monasteries and confiscating church property. This brought him some £15,000,000 (present value), half of which was spent on founding new bishoprics, while the rest went to his privy purse. He had begun by inheriting nearly £2,000,000 from his father, Henry the Seventh, so he had no lack of funds wherewith to indulge his passion for building. The suppressed monasteries and abbeys were sold to his nobles and courtiers, who sometimes pulled them down and sometimes converted them into country houses. We hear of the Controller of the Household getting a grant of Titchfield Abbey in Hampshire. The very next Sunday morning he had a sale of the marble monuments, the altars, and other fittings which had been left in the abbey church, and a few days later an army of masons and carpenters was at work converting the place into a house. Nowadays, in England, the name Priory or Abbey has come to suggest merely an old country house, rather than any sort of religious establishment.

At Hampton Court, in 1515, Cardinal Wolsey began building for himself a house which was far more splendid than any royal palace in the country. It was built round two great courtyards, and besides rooms for the Cardinal's own household of 500 people, it had rooms for 280 guests, all elaborately furnished. Wolsey engaged Italian decorators to adorn his house, and its luxury amazed even the French and Italian ambassadors. His gold and silver

plate was worth a million and a half of our money; his walls were hung with priceless tapestries, of which he had such a store that they were changed every week; his bedsteads were made of carved and gilded oak, and even of alabaster, and were furnished with bedding of velvet, silk, and satin, decorated with elaborate embroidery. It is not altogether surprising that this display was too much for his jealous master, and when, to turn aside an ill-tempered question, the Cardinal said he had built Hampton Court "To show how noble a palace a subject may offer to his sovereign", Henry took him at his word, and Wolsey had to make over the place and all its contents to the King.

Meanwhile, the ordinary country house was gradually becoming more comfortable. The upper rooms, at each end of the hall, were joined by passages; and inside staircases were introduced. At first these were spiral stairs of stone (and nobody seems to have explained how large pieces of furniture, such as Wolsey's alabaster bed, got up them!); then in the middle of the sixteenth century there was a sudden change, and they began to be made of wood in very broad flights with carved balusters and spacious landings. Another feature which appeared about the same time was the Long Gallery, an upstairs room like a broad corridor with panelled walls and large mullioned windows all down one side. The gallery at Buckhurst House, in Sussex, is 254 feet long by 16 feet broad. They were the ideal place to hang the family portraits, and our picture galleries are called after them.

In Elizabeth's time the fourth side of the courtyard was often left open, and sometimes the whole enclosure disappeared. Gatehouses were still built, but they stood quite detached, a little way in front of the house. Another great change was coming about in the gradual decline of

the Hall: separate Dining Parlours and Withdrawing Rooms were coming into favour, and in the ordinary country house the Hall became, early in the seventeenth century, merely an entrance vestibule, as it is to-day. There was still (besides the Long Gallery) a large common room which could be used by every one in the house, called the Great Chamber. The beds for men-servants and retainers seem to have been made up here, as they had been in the Hall, until well on in the seventeenth century.

It was early in the sixteenth century that the influence of the new Italian style first began to appear in England, and if we go to Westminster Abbey and look at the splendid bronze tombs of Henry the Seventh and his mother, Margaret Beaufort, we shall see the first examples of Renaissance work ever done in this country. These tombs were made by Torrigiano, the famous Florentine, who had also the distinction of having broken Michelangelo's nose in a fit of temper! Wolsey and Henry the Eighth imported Italian craftsmen, but only employed them to decorate houses built in the English manner by Englishmen. Henry left his son, Edward the Sixth, too crippled with debt to be a useful patron, and the Reformation made a breach between England and Italy, so the Italians packed up and went home; and except for decoration actually carried out by these foreigners there is no sign of any direct Italian influence until we come to the time of Charles the First and the work of Inigo Jones. The style which is called Tudor (lasting from the end of the Gothic period till about the middle of the sixteenth century) is thoroughly English. Its feeling is distinctly Gothic, and runs counter to all the principles of Renaissance design. Picturesque grouping is much more characteristic of it than symmetrical arrangement, and instead of the flat horizontal lines of the classical cornice

we find clusters of gables, dormers, and chimney-stacks breaking up the sky-line, with oriels and bay windows to break up the wall surface. The windows are made up of more and still more lights, with stone mullions and transoms. For some time they keep the Gothic hood-mould (or " label ") above them, and the lights have a flat Perpendicular arch under the transom or head, but after about 1550 they are all square-headed, as our transomed windows are nowadays.

The Elizabethan period is a time of transition between this Tudor work and what we call Jacobean. In Jacobean work the Gothic details have disappeared and an entirely new and foreign style of decoration has come in. The design of the buildings themselves does not seem to be much more Classical than before, but they are decorated with a confused assortment of semi-Classical detail. It was not due this time to the influence of Italians, but of German and Flemish decorators who were at work all over the country. For England was now Protestant, and since the Reformation not only were German artists imported instead of Italians, but there was also a steady influx of refugees who were driven out of the Low Countries by the persecutions carried on by Alva and the Spaniards. Their influence was a thoroughly bad one ; for the Germans had not imbibed the principles of the Renaissance at all, they had merely adulterated their own Gothic detail—already too much inclined towards elaboration—with a lot of undigested Classical forms which they used quite at random. Much of the Elizabethan and Jacobean work was apparently done by men who had no knowledge or idea of architectural principles, had never seen Classical forms in their proper setting, and merely worked from dreadful pattern-books published in Antwerp : it was rather as though we were

to search out the sort of people who design cheap suites of furniture or villa fireplaces for speculative builders, and give them *carte blanche* to decorate our most important new public buildings. The result was that columns and pilasters were stuck on anywhere, often quite out of scale with the rest of the building, and every sort of grotesque

FIG. 22.—Jacobean detail.

form and architectural absurdity was indulged in (Fig. 22). Every one knows the typical Jacobean mantelpiece or doorway, with hideous figures of leering satyrs or over-abundant females which, half-way down, turn into columns and might quite well develop lions' feet, or anything else that the designer had happened to think of. Jacobean pilasters, are apt to diminish in width towards the bottom, and are often covered with decoration, particularly with a

kind called Strapwork, which has the appearance of being cut out and stuck on.

There was never any period in English history when architectural detail was so debased and hideous; but the native building tradition (which now, alas! seems to be dead) was still alive and vigorous, so that the buildings themselves, apart from their coarse details, are often delightful. The best decorative work that was done at this time was plasterwork, and the simpler woodwork and panelling

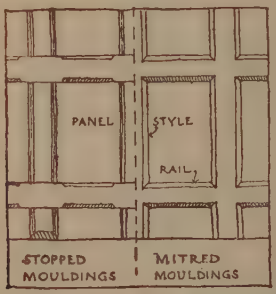


FIG. 23.—Jacobean and later panelling.

Seventeenth century panelling can usually be distinguished by its "stopped mouldings" (see Fig. 23) as compared with the mitred mouldings which came in at the end of the century; and the incised decoration which is typical of Jacobean work is familiar to most people because it occurs so often on oak chests and furniture.

Such was the state of affairs just before the appearance of Inigo Jones, who was to usher in the period of the English Renaissance.

CHAPTER XIII

INIGO JONES, WREN, AND THE ENGLISH RENAISSANCE

THE two great names in English Renaissance architecture are those of Inigo Jones and Sir Christopher Wren. We may think of the Inigo Jones period as roughly corresponding to the reign of Charles the First. Wren's work starts early in the reign of Charles the Second and continues almost as far as the time of George the Second.

It was a long time before the effects of the Italian Renaissance were seen in English buildings, but when the new style did appear it appeared suddenly and dramatically. James the First was king, and people were still building Jacobean houses all about the country—rather more symmetrical than Tudor houses but still of a thoroughly English type, breaking out into bays and gables and tall chimney-stacks, with a great deal of decoration in the way of fragmentary Classical forms, but with no real Classical feeling whatever—when the old Banqueting House of the palace at Whitehall was burned down in 1619 and Inigo Jones was told to build a new one. He was then a man of forty-six, and we know little of his history except that after studying in Italy he had made a reputation by his ingenuity in designing stage settings for masques, gradually working up, by his general usefulness in all sorts of practical matters, to the position of Surveyor-General—a post which seems to have combined the duties of Official Architect and First Commissioner of Works. He had just come back from his second visit to Italy, and the new Banqueting House which he designed, and which still stands in Whitehall, was a pure

Italian building with nothing English about it. Here, fo the first time, people in England saw Classical forms properl used and in their right context. The lower storey of strongl rusticated [1] blocks forms a plinth for properly proportione columns with all their appropriate entablature, and ther are no gables or chimneys to break the horizontal lines o cornice and balustrade. It is a building which might quit well stand in any town in Italy.

Not far from Whitehall we can find another Inigo Jone building, St. Paul's Church in Covent Garden Marke This was one of the first Protestant churches built in Eng land, and it is rather a strange chance that it should als be the first church built in the Italian manner. In shape i is something like an ordinary small Roman temple, with columned portico towards the Market. Unfortunately thi happened to be the east end, and so, although there is portico and a doorway, there is no entrance, but only a soli wall at the back of the altar ! It is an early instance of th sort of thing which later on became common in Renaissanc buildings, the architects being mainly interested in th external effect and not much minding whether it suited th internal arrangements or not.

There are not very many examples of Inigo Jones' wor left, but fortunately there are a few which show us how h applied the new Italian principles to the building of house One of them is the Queen's House at Greenwich (Fig. 24 which is even earlier than the Banqueting House and s might be called the first pure Renaissance building i England. Perhaps the best proof of the tremendous in fluence which Inigo Jones has had on English architectur is that if we saw the Queen's House, which was one of hi very first experiments, being built to-day, it would probabl

[1] See page 144.

The Banqueting House of Whitehall Palace

strike us as being quite a normal house and not particularly old-fashioned.

Inigo Jones' work was violently interrupted by the Civil War. Of course he was on the King's side, and he went through the siege of Basing House, in Hampshire, which he had helped to fortify. It held out for two years, and when it was finally taken by Cromwell Inigo Jones had to pay over a thousand pounds in fines out of the little store which he had buried in Lambeth Marshes before he left

FIG. 24.—Queen's House, Greenwich : the first English Renaissance house.

London. He did some fine work after the war, at Wilton, near Salisbury, and other houses, and died in 1652. Before he became famous as an architect his inventions in stage-craft had revolutionized the arrangement of theatrical scenery, for he was the first person to introduce in England the plan of setting the stage back within an opening, so that the scene could be boxed in with side-pieces, the actors entering from the wings. Before this the stage always projected forward into the auditorium, and no movable scenery was used. But the theatre was only one department in which he brought English life and English art into touch

with the new spirit of Italy; and that was his supreme achievement. With nothing to build on, and simply by the force of his own genius, he was able to set up a new standard, making a clean sweep of all the confusion and absurdities of Jacobean work and showing how Renaissance forms and principles could be adapted to the requirements of English building. He showed the way to a new means of expression, in search of which people had been groping about for nearly a hundred years; and his own work carried out the maxim which he laid down for good architecture —that it should be "solid, *proportional according to the rules*, masculine and unaffected."

There was not very much building done between the Civil War and the Restoration, when Christopher Wren first came into prominence. He was by nature a scientist, just as Inigo Jones was by nature an artist; and in his first thirty years, before he took up architecture, he won a great reputation for his scientific achievements. "That prodigious young Scholar Mr. Chr. Wren," as Evelyn calls him in his Diary, was Fellow of All Souls, Oxford, at twenty-two, Professor of Astronomy at twenty-five, and one of the founders of the Royal Society. The variety of subjects which he studied and lectured upon is quite amazing. We seem at last to have come upon an Englishman whom we can to some extent compare with the supermen of the sixteenth century in Italy. His earlier inventions included a weather-clock, improvements in coach-building, in agricultural methods, in the making of musical instruments, "easier ways of whale-fishing," and so on; he also carried out surgical operations and researches which led to the modern practice of blood-transfusion. Though he was still no architect, but only "Dr. Wren, Professor of Astronomy," he was made Assistant Surveyor of Works

when he was twenty-nine. Soon after this the Plague broke out in London, and Wren went to France, where he assiduously studied architecture for eight months and met Bernini, the famous Italian architect who designed the Piazza of St. Peter's at Rome. It seems strange that Wren should not have gone on to Italy, but so it was ; and he never had another opportunity, or any more leisure for travelling. For just after he got home London was devastated by the Fire, and he started on his life's work.

Wren was not at this time a great architect ; his knowledge of the subject was limited, and his taste was not always to be relied upon. But he was continually learning from the close personal attention he gave to his work, and his style developed with his experience. Probably no architect in the world has had such great opportunities, and few men have risen to their opportunities so nobly as he did. Wren's output is the life's work of a giant, for he built St. Paul's and fifty-three London churches, Greenwich and Chelsea hospitals, the garden front of Hampton Court Palace, many buildings at the Universities (including the splendid library at Trinity, Cambridge), and many houses. All this was in addition to the daily routine of his office as Surveyor-General, with its responsibility for endless matters connected with the administration and upkeep of public buildings and the royal estates and palaces, of which there were at that time about fifteen. And this amazing man still found time to be a Member of Parliament and President of the Royal Society, where he " took an exceedingly active part in discussions which ranged from comets to the making of jessamine-scented gloves with daffodils, and from Mercator's projection to the conclusion that all wholesome foods should have oils."

Wren left us the lesson of looking at things in a big way :

he thought of the City as a whole, and, realizing that his churches would ultimately be smothered by the buildings crowded around them, carefully planned the effect of their white spires breaking through and clustering around the great mass of St. Paul's. His first work after the Fire was to prepare a new lay-out plan for the whole of London, which would have done away with the narrow and crooked alleys, creating a city of spacious streets with a broad road along the river front. All offensive and smoky trades were, in Wren's scheme, to be kept outside the city boundaries. It was a fine project, which actually received the royal assent but ultimately had to be abandoned owing to the difficulty of settling with property-owners.

But if he planned things on a great scale, Wren also showed how to make much of a small space. The interiors of his city churches (which had to be fitted on to their old sites, usually very cramped and often of the most awkward shapes) show wonderful ingenuity in creating an effect of spaciousness by clever planning. One of the best examples is St. Stephen's, Walbrook, in which he has managed to give the effect of nave, aisles, and transept, although the church is actually only a square room. And what variety and imagination there is about the towers and spires of the churches! He had no precedent to work from, for it was the first time that a Renaissance spire had ever been thought of. The idea of diminishing storeys set one above the other is simple, when once some one has thought of it; but there is a sheer delight about the effect created by the varying plan of these different stages, the octagon set above the square and (as at St. Vedast's by the Post Office, perhaps the most charming of them all) the subtle alternation of stages, first with concave and then with convex sides.

Wren was faithful to his workmen and they to him:

having found good men he stuck to them, and the same names appear all through his contracts.[1] The splendid carving of Grinling Gibbons and the wrought-iron work done by Tijou the Frenchman are examples of the fine workmanship which he obtained. Carlyle once said that whenever he passed Chelsea Hospital he felt that it had been designed by a gentleman, and it was an apt remark; for if Wren's work is sometimes lacking in delicacy or refinement, there is always a sober and solid dignity about it. It was Wren who acclimatized the new manner of design, developing a really national style out of what was, to start with, still a foreign importation. He is above all the architect of London, for, excepting his buildings at Oxford and Cambridge, all his important work lies between Greenwich and Hampton Court.

Wren's great dome at St. Paul's is so unlike Brunelleschi's that we need not try to decide which is the finer; but certainly there is no dome in the world which has so fine an effect from inside as well as outside. For Wren realized that any dome shallow enough to look well inside must look feeble outside, while any dome which was successful outside would look cavernous and depressing from within. So he made two domes, one inside the other; one to be seen from inside and one from outside, with a steep brickwork cone between them to support the cupola and the outer dome. We know now that the weight is not perfectly distributed and that the piers supporting this enormous mass were badly built, with loose rubble inside the outer casing of wrought stone, which, after taking the whole weight for two centuries, has now crushed and threatened the dome

[1] In those days separate contracts were made for the different "trades," as is still done in Scotland, instead of one general contractor being made responsible for the whole of the work.

with collapse. And we may blame Wren for allowing this, particularly as in his report on the structure of the old cathedral he had specially condemned the Norman masons for the same carelessness in building their piers. But we know that he worked under enormous difficulties, and the fault may not have been entirely his.

The Cathedral as we see it is not Wren's favourite design,

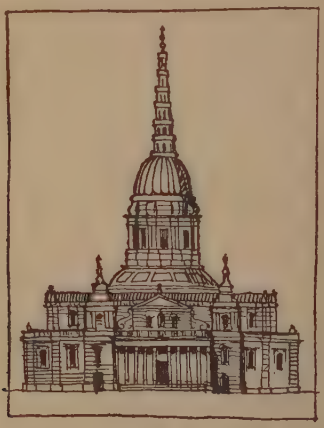


FIG. 25.—The accepted design for St. Paul's.

which was turned down as being an unsuitable shape. But neither is it the design which he was finally commissioned to carry out. For that was a truly terrible affair, and one can hardly believe that he intended anyone to take it seriously (though Charles the Second did so, describing it as "very artificial, proper, and useful"). It had a dome of exceptional hideousness, with a tall steeple like an extended telescope perched on top of it (Fig. 25), and it has been suggested that Wren put this absurd design before the Commissioners

to work off his contemptuous indignation at their rejection of his first scheme!

Wren served under five sovereigns, and all our records (including the diaries of his friends Pepys and Evelyn) snow us the respect and affection in which he was held. So it seems almost incredible that at the age of eighty-six he should have been dismissed from his post of Surveyor-General in favour of an incompetent nonentity, who had to be got rid of very soon after. But this actually happened, as the result of a campaign of petty jealousy and private enmity. The old man took his troubles very philosophically. He made an entry, in Greek, in his diary:

> "April 26 1718.
> And there arose a king which knew not Joseph.
> And Gallio cared for none of these things,"

and retired to his house at Hampton Court. Here he lived five years more, driving into London once a year to sit for an hour under his dome. The enmity of the Commissioners of St. Paul's would not even allow him a monument when he died, but his son Christopher turned the tables on them by inscribing on the tablet which was all he was allowed the very best epitaph of all: SI MONUMENTUM REQUIRIS CIRCUMSPICE: "If you would see his monument, look around you."

Wren's style in house-building (which we may call "the Queen Anne Style") followed broadly on the lines laid down by Inigo Jones, so it will be just as well to turn back and see what were the main differences that had been brought about by the new enthusiasm for Classical work. The immediate effect seems to have been to make the house a compact block instead of a rather straggling collection of rooms strung together. The ground floor became a base-

ment, and was allotted to the kitchen and service arrangements ; and the first floor or raised ground floor, approached from the outside by a flight of stone steps, became what was called in Italy the *piano nobile* or Floor of Honour, with all the reception rooms on it. As the upper storeys only contained bedrooms it was not necessary to make much of the stairs, which were often tucked away at the side, except when the entrance hall had to be made on the ground level, and then the main floor was reached by an imposing staircase. This was the usual arrangement in town houses, where there was no room for a large flight of steps up to the front door.

The square or oblong type of plan came into favour in place of the old courtyard plan, but courts or small areas often had to be left in the middle of the house so as to admit light and air into some of the smaller rooms, which even so were often gloomy and unhealthy. Great pains were taken to get a symmetrical arrangement of windows, and they were now made as single openings instead of being in several lights with stone mullions and transoms ; but sash windows with weights and pulleys only came in at the end of the seventeenth century, and until then the openings were commonly divided by a wood mullion in the centre, with a horizontal transom. A Classical cornice ran at the eaves level, and as this cornice had to continue round all four sides of the house it meant that there could not be any gables (Fig. 28, p. 176) : that is one reason why the form called the " hipped " roof [1] is so often seen in Renaissance buildings. Another difficulty cropped up over the windows to rooms in the roof. In a Tudor or Jacobean house you could always get a window by running up a piece of the

[1] The form in which there are four roof slopes on a square or oblong building, instead of two as there are when each end is gabled.

main wall at that point and making a gable ; but now that gables were disallowed these windows had to break out of the roof slope, and the rows of " dormer " windows (so called because they were usually the windows of sleeping-rooms) are a common feature of the Renaissance type of house. Sometimes a balustrade or a solid parapet was put above the cornice to heighten the façade, and when the house was adorned with columns or pilasters this parapet was occasionally given a little dwarf " order " of its own called the Attic Order (from Attica in Greece). And that was how the top storey came to be called an " attic."

The seventeenth-century builders did not see any way of working bay windows into the Classical scheme of things, so these had to be abandoned. We know what a favourite feature they had been in English houses, and the sacrifice shows how enthusiastically the new style was taken up.

Inside the house we notice a great change in the panelling. Instead of the small panels of Jacobean times, one large panel often occupies the whole height of the room, from a low dado-rail up to the ceiling, and the new arrangement gives a convenient space for hanging large framed portraits and pictures, which were now becoming common. On the staircases the sturdy Jacobean balusters continued until the end of the seventeenth century, when a more slender twisted form came into fashion.

Wren's details of wood-carving, plaster ceilings, and so on, were generally heavier and more elaborate than those of the earlier period. In his ceilings the leaves and stems are often so detached and free from the main surface that they have to be moulded on wire to prevent them breaking away. The ornament and decoration is often too exuberant, and tries to copy nature so exactly that it seems vulgar as compared with what went before it or what came after it.

Grinling Gibbons, his wood-carver, was an amazing craftsman, but he pushed imitation too far, with the result that one finds walls decorated with scrolls of foliage carved separately in soft wood and stuck on to the panels, or with rather repulsive festoons of dead fish and birds, shells and seaweed. It is a wonderful *tour de force*, but the treatment is all too detailed, so that the wood is made to do more than should be asked of it—just as the detached ornament in the ceilings has got beyond the proper limits of plasterwork—and this is always the point at which vulgarity sets in.

From the time of Wren onwards, we are in a new world as regards architecture. For one thing, it has become a hobby pursued with the utmost enthusiasm by cultured amateurs and people of leisure. Just as the Italian nobles of the sixteenth century prided themselves on their Latin, so now a knowledge of the Orders and the principles of architecture according to Palladio and other Italian authorities became one of the necessary accomplishments of a gentleman. Every one who possessed a country estate set himself to build or rebuild his house in the Italian manner, and to provide for himself a proper setting of porticoes and balustrades and formal gardens with statuary and little temples cunningly disposed about them, all inspired by the gardens of Italian villas. Lord Burlington was the best known of these amateurs. He probably never did any actual designing himself, but he had a tame architect living in his house—William Kent, who designed the Horse Guards buildings in London—and among other things he had erected for himself at Chiswick a copy of a famous Italian villa by Palladio, which was so much admired that one or two more copies were built in other places in England. There were considerable drawbacks about adapting a house originally designed for the climate of Italy. In this case, for instance,

chimney-stacks would have spoilt the design, so the smoke had to be carried off in a cavity formed in the shell of the dome!

But there were other amateurs who themselves designed buildings and had them carried out; people occupying the most surprising positions. There was a Lord of the Admiralty who designed the library of Worcester College, Oxford, and a Dean of Christ Church who designed the church of All Saints, and a Master of Caius College who designed Peterhouse Court at Cambridge.

Before the seventeenth century the architect, as such, had scarcely appeared upon the scene at all. In Jacobean times there was a rather mysterious person called John Thorpe, who left many plans of houses (including one in Paris picturesquely entitled "Queene mother's house, Faber St. Jarmin alla Parie, altered per J. Thorpe"), but it is quite uncertain whether any of them are houses which he himself designed, or indeed whether he was an architect at all. He may have been merely a surveyor and draughtsman. In all probability the master-builder was responsible, until the seventeenth century, for the design of a building as well as for carrying it out. We find an instance of this at Cambridge, where "Thomas Grumbold, Mason" receives three shillings for his design for Clare Bridge. Robert Grumbold, his son, both designed the river front of the college and worked on it himself, being paid in 1685 twenty shillings a week for his designs and for his work as a master-mason. But by the eighteenth century, at any rate, building and architecture had become quite separate departments, and it is from this separation that many of our architectural troubles have arisen, for it meant that architecture was losing its close touch with life. Till then a house had been arranged in a particular way to meet certain particular

necessities. The kitchen adjoined the dining-hall so as to make service easy : the private parlour was put at the other end to be away from the draughts of the entrance lobby and from the clatter and smell of the kitchens. And if more room or more light was wanted at a certain point, the style of the design was elastic enough to allow of throwing out a bay or building up a gable or adding a wing to meet the requirements. The reason that old houses built in a straightforward fashion have an air of homely comfort is just because, like old clothes, they have taken their shape from the lives of the people who lived in them.

But in the eighteenth century any large or important house was thought of from the outside rather than the inside, and the inside was only considered from the point of view of effect. There were reception-rooms arranged to open one from the other so as to give long vistas. There was a great hall, often two storeys high, with rows of columns, statues standing coldly about in niches, and a wide flight of stone or marble stairs—the whole being modelled on a hall in one of the imperial baths at Rome, but to the twentieth-century observer suggesting rather the entrance hall of a big railway station. A favourite arrangement, introduced by Inigo Jones—who, we must remember, first made his name as a designer of stage scenery—was to support the main mass of the house by wings which balanced each other on either side. These wings were usually brought forward and connected to the house by curved colonnades, so as to form a forecourt. The stables in one wing had to balance the kitchen quarters in the other ; and if these happened to have large windows with pediments over them the loose-boxes and harness-rooms must have windows to match ! Hot meals from the kitchen had to be carried for enormous distances along corridors and across various rooms—even

through open colonnades—before they reached the table. The principal rooms of these houses were arranged as if life consisted chiefly of ceremonies and functions, and the others received very little attention. The passages were dark and stuffy, being often lit only from the hall; and many of the rooms could only be reached by passing through others. The servants' rooms in the attics or basement were miserable; for the days when masters and retainers formed one large household were past, and servants were coming to be looked upon as a lower order of creation.

Even when these comfortless palaces were all the fashion, a good many caustic comments were made upon them. Dr. Johnson went with the faithful Boswell to see Kedleston, and thought it "would do excellently for a town-hall." Horace Walpole writes after a sojourn at Stowe, which was famous for the lay-out of the gardens and grounds, "Twice a day we made a pilgrimage to almost every heathen temple in that province that they call a garden; and there is no sallying out of the house without descending a flight of steps as high as St. Paul's." And there is a famous quotation from Pope about Blenheim Palace:

> "Thanks, Sir, I cried, 'Tis very fine:
> But where d'ye sleep, or where d'ye dine?
> I find, by all you have been telling,
> That 'tis a house, but not a dwelling."

Pope also left us the pleasant picture of the man who built a house in the Italian manner, setting himself to "collect the winds through long arcades to roar, Proud to catch cold at a Venetian door."

When we come to the smaller houses of the eighteenth century we do not, of course, find such fantastic pomposity as in the big ones; but their arrangement shows almost

every possible fault of planning, judged by modern standards of convenience. Planning would become a very different affair—and not nearly so interesting—if we were still able to disregard, as people did then, all the requirements which nowadays have to be considered. There was no need to save space, and no one apparently thought of saving labour. It did not much matter whether separate access was provided to any particular room ; and there was no need to consider problems of heating, nor of drainage (for there was no system of water-borne sewage disposal, so there were no sanitary conveniences inside the house).

The early Renaissance architects in England drew their inspiration chiefly from Palladio and the Italians, but as the eighteenth century went on much more attention was paid to actual Roman work. The four brothers Adam are famous in this connection, and their name is specially associated with a certain type of internal decoration—called from them " the Adam style "—which they introduced in the second half of the century. Robert Adam, who died in 1792, was the most notable of the brothers, and as a young man he spent much of his time travelling and studying late Roman work. The main features of his buildings are distinctly Roman and not Italian, and the detail which he designed for his interiors is often extraordinarily like Pompeian[1] decoration (Figs. 26 and 27). The delicacy and scholarly refinement of Adam's work makes it entirely appropriate as a setting to the Sheraton furniture, the flowered waistcoats and satin knee-breeches, the patches and powdered wigs, and all the rather artificial elegances of eighteenth-century life. Small detail and low relief are the order of the day ; and instead of the heavy wreaths of flowers and fruit which

[1] Adam was 20 years old when (1748) the discoveries at Pompeii focussed the attention of artists and architects all over Europe.

Wren indulged in, Adam's ceilings have delicate ornament spun like a cobweb over their surface. It is this note of

FIG. 26.—Painting from Pompeii.

refinement and delicacy, always combined with the very highest standard of craftsmanship, that is the special feature

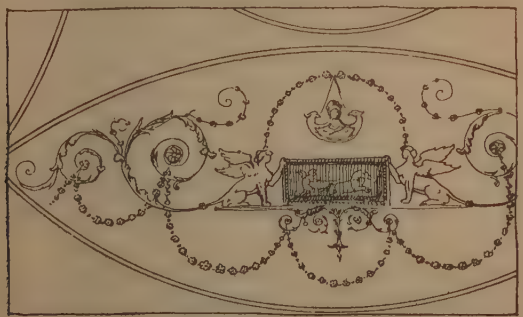


FIG. 27.—The "Pompeian touch" in Adam's plasterwork.

of the Georgian period. Adam made a new departure by designing furniture and fittings for his houses, so that everything might be in keeping. "All the appointments"

of the typical Georgian interior " have a personal note : the fireplace with its fender and trivets of primrose-pale English brass ; Bristol delft dishes neatly ranged on the dresser ; the shimmer of waxed table-tops in the candle light. Serenity reigns, because quality comes first."

As regards the exterior, we can generally distinguish Queen Anne and Georgian houses by their different treatment of the roof and doorway. In Queen Anne houses the eaves of the roof usually project over the wall-face,

FIG. 28.—" Queen Anne."

with a fairly heavy wooden cornice (often with carved brackets and a good deal of decoration) (Fig. 28). This fashion represented the wide Italian eaves, but in later work, when a more definitely Roman effect was aimed at, the roof was kept out of sight as much as possible and the eaves were hidden by carrying up the front wall as a parapet (Fig. 29)—probably a relic of the Attic storey which stood above the cornice.

As to doorways, the Queen Anne fashion is to have a border or " surround " of carved woodwork and a projecting hood supported on carved wood brackets, all of which gave

scope for a great deal of elaborate decoration. The Georgian architects built Classical porticoes to all their important houses, and the small houses often have a modified version of the portico in the shape of a porch with two slender wood columns. Another Georgian detail is the ornamentation of the fanlight or glass panel above the door, and the railings and wrought-iron balconies of these houses are always worth examining.

It is a good thing to know something about the Georgian

FIG. 29.—"Georgian."

period, because there are such a number of Georgian buildings left all over the country; and though the large country houses were sometimes pompous and over-elaborate the simpler buildings of the eighteenth century are delightful. A good many of our old towns, especially in the southern counties of England, still have whole street fronts of Georgian houses and shops; and even in London one can occasionally find an almost unaltered street—such as North Street, Westminster, or Bedford Row—even retaining the strange iron extinguishers, fastened to the railings, in which the linkmen put out their torches

when they had lighted my Lady's sedan-chair to her door.

In the country towns many of the Georgian fronts, with their mellow brickwork and white-painted sash windows, have been built on to much older timber-framed houses. The trouble about half-timber work was that, as the timbers inevitably shrank, the wet gradually forced its way into the crack between timber and plaster, and by the seventeenth or eighteenth century many of the town houses which had been built in such numbers a century or two before were on their last legs. Sometimes a new front was built of brick, which had now come into general use, and sometimes the old front was covered with boarding or hung with tiles. In the eastern counties it was often covered with plaster, and many old buildings, such as the Moot Hall at Thaxted in Essex, have recently had the plaster stripped off to reveal the carved beams and moulded timbers of the original medieval front.

* * * * *

Looking back, then, at the main lines of Renaissance development in England, we see :

(1) The importation of an entirely foreign style by Inigo Jones early in the seventeenth century, and the almost immediate triumph of this style over the late Tudor and Jacobean manner, even to the abandonment of the bay windows and gables which were so useful and of which English builders were so fond :

(2) Wren and his followers in the " Queen Anne " period, less influenced by Italy, acclimatizing the new style and making it less formal and more adaptable :

(3) After Wren, a return to the Italian allegiance. Architecture was taken up as a branch of scholarship and this resulted in a good deal of artificiality and unintelligent

imitation of foreign styles, first Italian and then Roman. But the wide-spread knowledge of Classical work and rules of proportion led to a very high standard of general taste, so that the ordinary buildings of Georgian times all over the country reached a wonderfully high level of quiet dignity, and once again a completely satisfactory national style was developed.

CHAPTER XIV

BAROQUE

ALTHOUGH the Banqueting House in Whitehall was the first English building in pure Renaissance style, the actual period of the Italian Renaissance which it reflects is a fairly late one, as we see by various " advanced " features in the design. The horizontal lines of the entablature break forward over each of the columns instead of running right through ; the Classical pediment which used to mark the gable end of a roof is now employed as mere decoration above the heads of the principal windows ; and—forgetting the rafters that used to lie behind it—it even becomes curved instead of triangular. But what perhaps affects the appearance and character of the building most of all is the fact that instead of being crowned by a boldly projecting cornice it finishes with the weakest, or at any rate the lightest, form of Attic [1] storey in the shape of an open balustrade.

The Italian Renaissance style, which had started in the sixteenth century with a very free adaptation of Roman forms, did not stand still, but developed very vigorously for two or three hundred years ; and the development followed quite natural lines. The Renaissance itself began with a great intellectual stirring. Full of enthusiasm, men set themselves to study the ways and the works of the Romans, so that they might recapture something of the order and dignity of the Old World. Then, of course, the pedants got their chance, producing books of rules and measured examples and solemnly insisting that the depth of an architrave must be four thirds of the diameter of the

[1] See page 169.

column, and this moulding ·23 of the diameter and that one ·76. But such men as Michelangelo were not going to be content to design by rule of thumb, and the pedants were further confounded by the results of wider researches which showed that classical buildings did not at all agree with each other in the matter of these proportions. The unsuccessful attempt to tie men down by rigid rules only

FIG. 30.—"Baroque."

caused a reaction in the direction of greater freedom, and so the sixteenth century brings us to the later style of the Renaissance, which is called Baroque, and which even now has power to make fervent and conscientious critics abandon their self-control when they contemplate it.

It is not at all easy to define Baroque, for it has taken so many different shapes in different countries. To anyone who has been on the Continent, the name will be associated with the memory of churches like the one shown in Fig. 30,

pulpits and altars adorned with very solid angels in billowy draperies fluttering down from equally solid clouds carved out of stone, wood, or marble ; doves emerging from spiky sun-bursts ; columns with curly shafts like barley-sugar ; tombs of the pompous kind with ladies disposing marble curtains about a self-satisfied bust, or of the gruesome sort where a grinning skeleton lunges with a spear from the doorway of a charnel-house.

In the widest use of the term, " Baroque " embraces all Renaissance work which does not conform to strict Classical rule : the details of Jacobean times and the steeples of Wren's churches would both come under this head. But in general use we may take it as describing the Italian seventeenth- or eighteenth-century style and the work which corresponds to it in other countries. One of its obvious characteristics is a profusion of curves ; curved lines on plan and curved lines in elevation—in pediments, gables, buttresses, and brackets. Another is the way the lines of the building are broken by continual offsets and projections, or interrupted by pieces of ornament. Plain wall surfaces are got rid of, being broken up by panels, niches, and decoration of all sorts ; and sculptured figures crop up everywhere. Buildings take on a theatrical appearance. The façade of a church, for instance, is treated as a piece of scenery, and covered with an elaborate design of architectural features which often bear no relation to what is behind. Sometimes these façades are quite different in shape from the actual end of the church, just as at St. Paul's the outside walls of the aisles tower up into the air, far above the level of the roof, with nothing behind them.

The theatre was a most important feature of court life in Italy, and in architecture the Italians employed their mastery of stagecraft with splendid effect. It was only

from the sixteenth century onwards that the planning and lay-out of buildings in relation to their site was scientifically studied, along the splendid lines which the Romans had laid down for all time. The early Renaissance has little to show in this way, and it was the example of Michelangelo's plans for the Capitol at Rome, and Bernini's piazza in front of St. Peter's with the magnificent oval sweep of its colonnade, that gave us all the fine town-planning of to-day; while, as an instance of a building perfectly fitted to its position and setting, there is nothing in Europe finer than the Baroque church of Sta. Maria della Salute, set on the bend of the Grand Canal at Venice. Even the actual tricks of scenic design, such as the cunning manipulation of perspective, were applied to architecture. An imposing flight of stairs would be made to appear longer than ever by being carefully narrowed towards the top, and the apparent length of an avenue would be similarly exaggerated by making the sides converge.

In different countries Baroque work took on a different character. In the south of Italy and in Spain it was most exuberant, and the decoration often became overwhelming. There is a chapel in Palermo where the architectural forms of the chancel walls are completely smothered with stucco figures in every sort of attitude: it looks as though a crowd of people dressed as angels and cupids had swarmed up the walls to find some place from which to watch the proceedings below, and then, when some of them were still climbing and some had already managed to seat themselves on brackets or window-ledges, the whole scene had suddenly been frozen into stucco! This extreme form of Baroque is sometimes called Rococo. The word really means "rocky," and originally referred to the fashion of decorating wall surfaces with a sort of rock-

face or grotto effect, sometimes with shells, snails, etc., introduced. We can see an old-fashioned form of Rococo work in England, in the decoration of fairs and roundabouts.

German Baroque, like German Gothic, is full of grotesques. It produced the pattern-books and the style of detail which we call Jacobean (see page 156).

Holland and England never received the full blast of Baroque influence, because it was pre-eminently a Roman Catholic style. The Renaissance and the Reformation threatened the very existence of the Church, and it had to meet the danger by mobilizing special forces for a " defensive offensive." The Jesuit Order, founded by Loyola in 1530, formed its " shock troops," and the Jesuits definitely adopted Baroque as the distinctive style of their churches all over the world ; a " style of conscious pride and display," to advertise the success of the Counter-Reformation and the power and magnificence of the Church. Everything was done for surprise and effect. As some one once wrote about Blenheim Palace, a piece of eighteenth-century Baroque, " Success blazed from every pompous stone."

Before the eighteenth century was out, architectural taste in most parts of Europe had veered round towards a closer imitation of Classical work, and Baroque had lost its vigour, becoming for the most part merely vulgar and insipid. From then until our own day there has hardly been anyone to say a good word for it. The standard architectural histories dismiss the whole record of the seventeenth and eighteenth centuries in Italy with a few scathing comments on the " debased application of Renaissance features " and so on. And after tracing the growth of great architecture from the reasoned use of forms appropriate to their purpose, it is quite natural to feel impatient and angry with designers who throw aside the principles which have been so carefully

developed, and who declare that any sham and any topsy-turvydom is allowable so long as it helps the effect they want to produce.

But the post-war world that we live in is tolerant of much that shocked our fathers, and the Baroque spirit of revolt against accepted canons of art seethes all about us to-day, making life less restful and more perplexing but also, undoubtedly, more exhilarating. The architectural purist gasped and fumed at the liberties people took with the sacred parts and proportions of the Roman Orders. We gasp at the young painter who takes liberties with the proportions of the human figure, but we have come in contact with so many rebels in art, literature, music, and politics, that nowadays our instinctive annoyance over his nymphs with tubular legs and wedge-shaped faces is more likely to be tinged with a readiness to examine his point of view and to try to discover what he is aiming at. Just as we now revive neglected Georgian comedies and operas, so we are beginning to find something we can appreciate even in the more florid eighteenth-century buildings of the South.

The writer of a standard book on Italian Renaissance Architecture [1] says, " The Barocco style, despite its untruthful and unprincipled character, seems to have its uses in expressing ostentation and bombastic pomp " ; and in judging Baroque we must keep in our minds a picture of the life of the seventeenth and eighteenth centuries, which —both in its faults and its merits—it so exactly expresses. The court of Versailles, where all the notables of France revolved in dutiful attendance around the radiance of Louis the Fourteenth, set a fashion which was followed all over Europe. Every little prince and Grand Duke had his court,

[1] W. J. Anderson, *The Architecture of the Renaissance in Italy* (1896).

where the nobles, who were the patrons of contemporary art and architecture, had to waste their time in a boring routine of pompous ceremonies and stupid, but graceful, amusements. It was a world where people strutted about in flowered coats and full-bottomed wigs to the strains of Italian opera ; singers and players posting continually from one court to another, leaving Madrid or Naples to travel (by road !) to Moscow for some special production in the Empress Catherine's theatre. Life was pompous and artificial, and these are exactly the qualities of Baroque buildings. In religion it was a time of spiritual deadness and worldly ambition, and as a result it produced the most undevotional churches, and crowded them with meaningless and inappropriate adornments. But just as there was much that was really fine in the life of these two centuries, so it was with the Baroque style. When it is feeble and lifeless it may fairly claim the title of The World's Worst in architecture ; but when it is vigorous enough to carry us past the trivialities of detail we can sympathize with the boisterous pursuit of beauty for its own sake—beauty independent of moral maxims—the triumphant piling-up of an elaborate composition, and the consummate stagecraft of its setting.

CHAPTER XV

THE RENAISSANCE IN FRANCE

NEXT after Italy, France is the country which has had most influence in directing the tastes and fashions of Europe; and, taken as a whole, French Renaissance architecture shows a dignity and a consistency of tradition which are not to be found in English Renaissance, nor even, to the same extent, in Italian.

Italian influence reached France a little sooner than it reached England, and (as in the case of the Romans' introduction to Greek art) it was a foreign campaign that first brought the French into touch with the Renaissance. Charles the Eighth led his army down into Italy in 1494, and on his way to Naples stayed for a week in Florence. Lorenzo the Magnificent had only been dead two years, and, having thrown out his feeble son Piero, the city was under the stern rule of Savonarola, the Dominican monk. The King and his staff were quartered in the Medici palace, and when they left they looted it thoroughly, sending many of Lorenzo's treasures home to France. This was only the first of several Italian campaigns, and in the sixteenth century France was full of Italian craftsmen and artists. Charles himself established a colony of twenty-two at Amboise, and Francis the First, who rivalled his contemporary Henry the Eighth in his building enterprises, brought notable men like Benvenuto Cellini and Leonardo da Vinci to his court.

The famous châteaux on the Loire, such as Chambord, Blois, and Chenonceaux, belong to the first half of the sixteenth century, and they are the French counterparts of

our elaborate Tudor houses. Here again we can see that the whole character of the design is still Gothic. Notice the picturesque grouping of different parts, the innumerable turrets, chimneys, and pinnacles, which break the sky-line, and the way the plan preserves the arrangement of a fortified castle. In breaking their sky-lines, the French builders went even farther than the English, and the sketch of Chambord (Fig. 31) shows one peculiar feature of which they were very fond—a separate roof for each part of the building instead of one roof over the whole. The com-

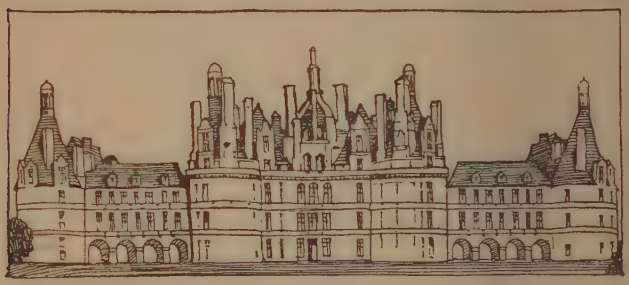


FIG. 31.—Chambord.

plicated outline of the centre block at Chambord is made up of four steep roofs with a stone lantern in the middle, tall chimney-stacks (not clustered like our Tudor chimneys) and very ornate dormer windows.

Besides the work which can be compared with Elizabethan and Jacobean—Gothic structure clothed in garbled Classic detail—there was full Gothic building going on in France right through the sixteenth century which showed hardly any trace of Renaissance influence. In England, as we saw, the flowing curves and the rich elaboration of the fourteenth century had died down long before the sixteenth

nto the new (" Perpendicular ") style, which, though it lazed out now and then into elaborate splendour, as in Ienry the Seventh's Chapel at Westminster, was for the nost part plain, and dealt with forms bounded by straight nes. French Gothic, on the other hand, was at its most laborate Flamboyant [1] stage when the Italian influence egan to appear. There was no break in church building s there was in England at the Reformation, and so Gothic nd Classic detail gradually merged into each other in a urprising manner. All over France we find churches and ther buildings which seem to belong equally to both tyles.

In the last half of the sixteenth century, building activity vas slowed down by religious wars and other troubles ; and bout the same time that Inigo Jones appeared in England nd swept away the " bastard Classic " Jacobean influence y introducing the pure Italian style, France produced the reatest figure of her early Renaissance period—Francois Mansard. Mansard, however, did not break away from he national tradition so completely as Inigo Jones did. Although he used the Italian orders on his façades, his buildngs never looked at all Italian, but always thoroughly French ; for he kept to the high-pitched roofs and made a eparate one for each different part of the building, the entre portion generally rising higher than the rest and he roofs at the end of each wing also rising above the nain ridge. These higher sections of roof, which rise lmost like towers, are called " pavilions," and they are a onstant feature of French work. English town buildings of he nineteenth century often copied this French fashion of teep roofs, with their pavilions and their decorated ridges. We also use a form of roof called a " mansard," which was

[1] See page 117.

actually in use in France before Mansard's time though it is named after him (Fig. 32): it has a slope which is suddenly flattened towards the top, giving the increased attic accommodation of a very steep roof without rising to an unmanageable height.

One of the most important events in the history of French architecture was the competition for a new façade to complete the Palace of the Louvre. First of all (1665) Bernini, the greatest Italian architect of the day, was invited to Paris. He came with almost regal pomp, and prepared a design which, we are told, he attributed to divine inspiration. It was a magnificent project, but it would have

FIG. 32.—Diagram of Mansard roof.

necessitated the destruction of most of the rest of the palace and of the Tuileries as well. Æsthetic considerations were the only ones which seem to have concerned Bernini, for he complained that Colbert, Louis the Fourteenth's prime minister, treated him like a little boy, pestering him with matters like sanitation, which, he said, were "unworthy of a great architect like me."

The design finally accepted was by Claude Perrault, who was not an architect at all but a doctor and a scientist. His success is a remarkable parallel to that of Wren, for they were exact contemporaries. Wren came to France in the Plague Year, 1665, and actually met Bernini in Paris: his style was very much influenced by French buildings

which he studied on this two-years visit, and though of course Wren never saw Perrault's façade there is a real similarity of feeling between the work of these two men.

Perrault had some at least of the characteristics of a "great architect": his façade was much too long for the building, projecting 40 feet too far at one end and 45 at the other, which led to some difficulty in joining it up to the rest. It broke away entirely from French tradition, for the roof does not show at all (Fig. 33). The ground storey serves as a plinth for a colonnade of "coupled" [1]

FIG. 33.—The Louvre; Perrault's façade.

columns which stands out boldly in front of the wall—a Baroque *motif* which Wren also adopted for the porch of St. Paul's. This was the first instance of what now seems quite a typical modern handling of Renaissance design.

The seventeenth century was the grand period of French history, illuminated by the splendour of the "Sun King," Louis the Fourteenth. He carried out colossal building enterprises, of which the enlargement of the Palace of Versailles is the most famous. In this century we see a great advance in the direction of unity in design as opposed to the grouping of many scattered parts, and this encouraged

[1] i.e. arranged in pairs.

another arrangement which is now common, the use of one large order tying together two or three storeys of a façade instead of each storey having its separate order. The formal treatment of the gardens and surroundings was a further step towards unity, bringing the house and its setting into one design, and Le Notre, the great landscape-gardener of Louis the Fourteenth's reign, is as famous as Jules Mansard (the Younger), the King's chief architect, and Le Brun, his decorator. This treatment of gardens with terraces, steps, and fountains, was a great feature of the Italian villas of the sixteenth century, and the work of Le Notre at Versailles spread the fashion all over Europe. One of the finest English examples of lay-out—the scheme of radiating avenues and formal pieces of water at Hampton Court—was carried out immediately after Mansard's remodelling of Versailles.

There was not much building of country houses in the time of Louis the Fourteenth, for the nobles had to live at Court ; but there were many fine churches built in Paris in which various experiments in dome design were made. Of these, the best and the most familiar is the Church of the Invalides, built by the younger Mansard.

Louis the Fourteenth died in 1715, after reigning for seventy-two years. He left France absolutely supreme in all matters of culture ; but unfortunately he also left her bankrupt, with about half of the population on the verge of starving, and only one-tenth in comparatively easy circumstances. So in the reign of Louis the Fifteenth—another long one, lasting fifty-nine years—there was much less building, and the interest is chiefly focussed on developments in decoration. Louis the Fourteenth, "the best actor of majesty that ever filled a throne," had overshadowed everything during his reign. The "Louis Quatorze"

style expresses this by its pompousness and splendour, and by the vast scale on which everything is conceived. " Louis Quinze " is a more intimate style, with charm and finished elegance taking the place of power and splendour.

The change naturally gave admittance to the Baroque and Rococo influences which were surging so violently about Europe, and Louis Quinze is the period *par excellence* of French Baroque. This was no doubt due to a swing of the pendulum in matters of taste. Long before Louis the Fourteenth was dead, people grew tired of formalism and the pompous routine of the court, and in the next reign they developed a new enthusiasm for country life, for travel and fashions brought from abroad, and for little private pleasure-houses and retreats where they could play at simplicity.

It was a time of dissipation and wild extravagance, and fashions in decoration reflected this until they reached a point where the pendulum started to swing back again towards moderation. We can trace the Baroque influence in the increasing hatred of straight lines and the continual flow of curves. Rooms are still decorated with panelling, but the tops of the panels are first rounded and, later, elaborately curved. In time all the right angles disappear, and the actual lines of the panelling system blossom out into scrolls and tendrils or are broken by shells and other ornaments, until finally the vertical and horizontal lines forming the framework of the design disappear altogether. In looking at florid Renaissance work we can judge the progress towards the more extreme phases of Baroque by seeing how far the sculpture or painted enrichment encroaches upon this framework. In the most extreme instances of all, the architectural lines seem to be entirely submerged.

It was at the beginning of the eighteenth century that Watteau painted his dainty pastoral scenes; he died in 1721, aged only thirty-seven. A little later, the writings of Rousseau and the extraordinary vogue of an English novel, Richardson's *Clarissa*, encouraged the fashion for country life and pursuits. Both in France and in England Phyllis decked her crook with fluttering ribbons, to the distraction of her attendant swains—Strephon and Corydon in knee-breeches and flowered waistcoats. Grottoes in artificial rock-work became popular (giving us our terms "grotesque" and "rococo"); gardens were adorned with Chinese pagodas, and Chinese fashions in furniture and decoration began to appear. There were even essays in Gothic for garden buildings, which resembled real Gothic about as much as the "Chinoiseries" resembled real Chinese work.

One of the most delightful buildings belonging to this period is the Petit Trianon, a little pleasure-house built for Madame Du Barri at Versailles by Jacques Gabriel (whose father, grandfather and great-great-grandfather had also been famous architects). Here Royalty played at living the simple life, and in order that its privacy should not be disturbed by servants there was even an ingenious arrangement by which the centre of the dining-table "descended into the basement after each course to be relaid, its place being filled by a metal rose."

The simple dignity of the Petit Trianon calls our attention to a very important fact: namely, that while fashions in internal decoration were in the extreme stage of riotous extravagance, the exteriors of French buildings remained sober and dignified. Although in the widest sense of the word most late Renaissance buildings could be called Baroque, French architects, for the most part, did not

Versailles : the Petit Trianon

indulge in the extreme forms of Baroque which were the fashion in Italy, Germany, Spain, and other countries. The fact that they were able to keep their balance in this way and carry on a consistent tradition seems to have been very largely due to the influence of the Academy of Architecture, which was founded in 1664 and had a very great influence on architectural education. The Academy instituted a course of study at Rome (which, with its Prix de Rome, continues to this day) and this Classical basis of French style shows itself in a sort of natural sureness in matters of design and proportion, which strikes us continually when we look at the typical buildings of any French town. At the end of Chapter XIII we traced the high general standard of our common English Georgian buildings to the intensive study of Classical work in the eighteenth century, and as we shall find something in the way of a similar influence producing the splendid modern Renaissance buildings of America, it is worth noting this point as one which may possibly afford some guidance among the tangled problems of the present-day situation in English architecture.

The Louis Quinze style dates from before the death of Louis the Fourteenth ; and the Louis Seize period begins about 1730—forty years before Louis the Fifteenth died. It was a period of reaction from the boisterous luxuriance of Louis Quinze decoration towards a stricter and more classical style. Walls were still covered with panels in white and gold, decorated with graceful scrolls and garlands, but the decoration was kept inside the architectural outlines, and—like the Adam style in England—the Louis Seize soon began to take on a definitely Roman character. The paintings discovered at Herculaneum and Pompeii provided artists with new *motifs*, and the enthusiasm for Roman

details increased all through the century. Then, when the Revolution put an end to the old order of things, the new government shaped itself on republican Rome, with Napoleon Buonaparte as First Consul.

The style of the period between the Revolution and the reign of Louis Philippe (1830) is called the Empire style, and this is the period when the Roman fashions were strongest. Napoleon adorned Paris with Roman temples (such as the Madeleine), columns (such as the Colonne Vendôme), and arches (such as the Arc de Triomphe, the largest triumphal arch in the world). People " had Etruscan vases on their mantelpieces and breakfasted at tripods, sitting on curule chairs." The vigour of the eighteenth century was to a great extent lost, and the style was always apt to degenerate into mere copying of actual Classical details. At this time fashion in decoration was in a most capricious state, influenced by any sort of outside circumstance which caught people's imagination : the campaign in Egypt even afflicted Paris with an outbreak of pylons and sphinxes !

For two or three centuries the fashions set by France have been respectfully followed by the whole of Europe. Our town buildings of the last century, in particular, show us many reflections of these fashions both in their exteriors and in their internal decoration ; and if we were a little more familiar with the styles of the French Renaissance many of the later developments of English architecture would become a good deal more intelligible.

CHAPTER XVI

THE NINETEENTH CENTURY IN ENGLAND

AT the beginning of the nineteenth century the architectural situation in England was, on the face of it, a very happy one. The wayward extravagances of the seventeenth century had died a natural death, and out of the general enthusiasm of the eighteenth century, first for Italian and then for actual Roman work, had come the Georgian style. It was quieter and simpler than the "Queen Anne" which went before it, with a graceful refinement about the details and proportions which showed the result of Classical study; and it was plainer and cheaper, which was an advantage, for there was everywhere an enormous amount of building in progress.

In a few districts where brick was not common, Gothic feeling still survived. In South Lincolnshire, Northamptonshire, Oxford, Gloucester, Wiltshire, and Somerset—the tract of stone-building country which runs diagonally across England from the Wash to the Severn—the Cotswold type of stone house survived, with its gables, mullioned windows, carved finials, and other Tudor details. In those districts, too, where oak was plentiful, as in Essex, Sussex and Kent, people went on building timber-framed houses with overhanging storeys, which could not possibly be made to look Classical; but even these developed a pleasant Georgian variety—more associated with America than England—with walls covered in weather-boarding, a white cornice under the eaves, a gracefully designed doorway with a fanlight over it and sometimes a light porch in

front, and sash windows divided into panes by thin glazing bars.

All over England there was still a natural building manner available for every occasion; for the Georgian style had evolved quite normally, producing quiet and pleasant buildings which everywhere settled comfortably into their surroundings without offending their neighbours. This happy condition continued till some time after Waterloo, and even, in favoured places, till about 1840. But there or thereabouts the chain of tradition was snapped, and although there were many fine buildings put up in the nineteenth century we look back on it as the sorriest period in the story of English architecture, the time when we fell on evil days from the effect of which we have not yet recovered. Since Georgian times we seem to have lost the power of designing in an unaffected manner.

This decline cannot be explained by blaming the Gothic Revival. It is more to the point to remember that even in the eighteenth century the architectural situation was already very unstable, for people's tastes were continually altering, and at any moment some new book or topic of interest might bring about a complete change in architectural fashions. As early as 1740 people had begun to amuse themselves by building fantastic garden cottages "in the Gothick style," and soon after this we see the beginning of the Romantic movement in literature, which played such an important part in the revival. To a certain extent it was a revolt against the idea that Italy was the one and only source of culture in Europe; and in Germany, England, and France, we find writers setting out to show what a rich heritage of national tradition the northern countries could boast.

In England, one of the earliest Romantics was Horace Walpole, writer and amateur architect, the son of the

famous Prime Minister. In 1753 he bought a house on Strawberry Hill, and carried out a series of Gothic additions to it which were a great source of interest to his friends and led to further essays in what is sometimes called " Strawberry Hill Gothic." Walpole's enthusiasm was stronger than his judgment. He was distressed at the absurdities perpetrated by people who fondly thought they were designing in the Gothic manner, and he tried to get back to purity of design by making exact copies of original examples ; but he had no idea of appropriateness, and committed absurdities just as bad as theirs. For instance, he chose a bishop's tomb from Westminster Abbey as a model for one of his mantelpieces, and took the aisle vaulting of Henry the Seventh's chapel as a pattern for the ceiling of a picture gallery.

Enthusiasm for Gothic spread rapidly in literary and fashionable circles, and several Gothic houses and churches were built in the eighteenth century. Sir Walter Scott, with his " Lay of the Last Minstrel " and the long series of Waverley Novels, did more perhaps than any other writer to revive the glamour of the Middle Ages ; but he was only one of a line which included Wordsworth and Byron at the beginning of the nineteenth century and the great Victorian poets a generation later. One of the most extraordinary architectural productions of the time was a house called Fonthill Abbey, in Wiltshire, built in 1802 by a strange dilettante named William Beckford. It cost him £273,000, and it was built and equipped in the most elaborate Gothic style. Unfortunately the contractor was a rogue and scamped the foundations ; and after standing for about twenty-three years the great tower, which was 278 feet high, collapsed and wrecked most of the house.

These first revivalists had very little intelligent idea of

Gothic building: they did not distinguish between the different periods of medieval work, or even realize that it was absurd to take the design of a fourteenth-century chantry chapel and reproduce it as a billiard-room. So long as a building had Gothic features they were satisfied. But scholars and antiquaries soon began to study and classify the different phases of medieval work, and in 1817 Rickman's book came out, showing the division of the style into "Transitional," "Early English," "Decorated," and "Perpendicular." It was followed by Pugin's *Illustrations of Gothic Architecture*, which dealt with domestic and secular work as well as ecclesiastical buildings. Pugin's book had most important effects, for it helped people to realize that a house could be Gothic without being built in the style of a church: this brought to an end the first fantastic phase of the Revival.

Then—from 1833 onwards—came the Oxford Movement; and instead of being a subject of intellectual interest the Gothic Revival acquired the impetus of fierce religious devotion. Every detail of medieval art and ritual came to be regarded as part of the great heritage of the Faith, which the Tractarians passionately set themselves to restore.

The Gothic work produced at this time was still thoroughly English in character. The style of the sixteenth century was the most popular one, and we can see plenty of examples about the country—rectories, entrance-lodges, and cottages—as well as in districts which were then the outskirts of London, such as St. John's Wood and Swiss Cottage. These houses usually have gables with elaborate barge-boards, spiky finials, and "drops" (all shown in Fig. 34): chimneys are often of the clustered Tudor type, with a round shaft for each smoke flue.

By 1840 Gothic had made great strides, and in the com-

petition for the new Houses of Parliament, which were begun in that year, one of the conditions was that all designs were to be in the Tudor style. The Gothic party were already in a strong position, and they were shortly to be reinforced by the aid of a most powerful champion ; for in 1849 John Ruskin appeared on the scene with *The Seven Lamps of Architecture*, which was followed by *The Stones of Venice.*

The Oxford Tractarians and their High Church followers had established Gothic art as the outward and visible sign

FIG. 34.—"Parsonage Gothic."

of the spiritual grace which they were recovering for the convalescent Church of England. Ruskin and his disciples proclaimed that a return to medieval methods of design and craftsmanship was the only way of escape from the nightmare of modern industrial conditions, which were already degrading the worker by robbing him of all interest in his work. His examples were mainly drawn from the medieval buildings of Italy : Giotto's tower at Florence, and the Venetian palaces with their inlaid patterns of coloured marble, provided the texts for many of his sermons ;

and as a result we can notice a distinct foreign influence beginning to show itself in English buildings soon after 1850, particularly in an attempt to introduce colour into the design. This is a feature of the work of men like William Butterfield (the designer of All Saints' Church, Margaret Street, and of the chapels at Rugby School and Keble College, Oxford), and his contemporaries. The conceptions of these men were much finer than their achievements: they apparently did not realize that if English buildings are on the whole lacking in colour it is because their natural materials do not lend themselves to the style of patterned design which Ruskin admired so much in Italy. When it came to working out coloured designs in a mixture of brick and stone, with an occasional quatrefoil panel of blue slate, nothing but a touch of real genius could avert the most disastrous failure.

Very soon after the publication of Ruskin's first books, another writer appeared who turned people's attention in a new direction. This was Viollet-le-duc, writer and architect, who restored medieval buildings all over France—only too often by pulling down what was left and rebuilding them in new materials as he imagined them to have been. His monumental books on the French architecture of the Middle Ages contained diagrams showing the structure and arrangements of buildings and all their parts with extraordinary clearness, and soon after 1860 English architects began to sprinkle their buildings with the French Gothic features of which he provided such conveniently exact details. Steep slate roofs appeared, with elaborate iron cresting along the ridge; turrets and dormers of various exotic forms broke in upon their lower slopes; ornamental ridge-tiles and finials came into fashion, and the dreadful terra-cotta dragons that are still sometimes to be seen

adorning the gables of villa-residences. The adoption of these pierced or spiky ridges for houses was absolutely disastrous, as it destroyed the straight roof-line which was almost the only feature left to contribute any feeling of restfulness or dignity. English domestic architecture had reached its very worst phase, and the effects of this phase upon the tastes of the speculative builder and his circle of influence have not yet entirely worn off.

In order to present a consecutive account of the Gothic Revival we have so far dealt exclusively with this movement : but the Gothic enthusiasts did not by any means have a clear field. The Battle of the Styles raged furiously all through the nineteenth century, and the final decision was only reached towards the end of it. Roman work had been, as we saw, the chief inspiration of the men who developed the Georgian style ; but about 1820 there came a change of fashion, and alongside of the Gothic Revival there set in a Greek Revival.

It is strange to think that although people had been studying the Classics for four hundred years or so, and setting up classical art as the standard by which all subsequent art must be tested, no one seemed to realize the importance of Greek architecture or pay any attention to it whatever. It was partly due to the fact that Greece was in the hands of the Turks and not at all accessible to foreigners, so that very little was known about it. But in 1762 there appeared a book called *Antiquities of Athens*, by Stuart and Revett, two architects who had made their way to Greece and succeeded in measuring and drawing the principal temples, and a whole new field of study was opened. Then in 1812 Lord Elgin brought to England the sculptures of the Parthenon (the " Elgin Marbles ") which had been gradually perishing from exposure and wanton damage, and this

gave a further impulse to the interest in Greek art. From about 1820 onwards, the Greek style was used a great deal for public buildings. In London the most important examples are the colonnade at Hyde Park Corner, the British Museum, the huge Doric gateway to Euston Station, and St. Pancras Church—which, except for the steeple, is an almost exact reproduction of the Erectheium, an Ionic temple at Athens. Even town houses were built in an adaptation of the Greek manner (Fig. 35). They are generally stuccoed, like the houses built by the Georgian enthusiasts for Palladian

FIG. 35.—Greek Revival.

fashions, in order to disguise the unclassical appearance of English brickwork ; and though rather severe—for the idea of homeliness could never be associated with the Greek style —these houses have often a pleasant dignity about them.

The Greek Revival produced one of the very finest buildings of the century, namely St. George's Hall at Liverpool. The architect was a young man called Elmes, who won the open competition, held in 1839, when he was only twenty-four years old, and who unfortunately died in 1847 before his great building was finished. It is a magnificent design, and though it is inspired by Greek work the whole composition is extraordinarily original.

Germany experienced a Greek Revival at the same time as we did. It produced a good many important public buildings, and among them the Valhalla at Regensburg (1830), which is an exact reproduction of the Parthenon. A similar project had been started a year earlier in Edinburgh as a national memorial, but was abandoned before the building had got very far. The picturesque Doric fragment on the Calton Hill is all that remains.

Probably the greatest architectural achievement of the century in England was the building of the new Houses of Parliament. We naturally think of them as a product of the Gothic Revival, but as a matter of fact Sir Charles Barry, who designed them, was the foremost architect of the opposing school, and it was only under compulsion that in this case he worked in the Tudor style. As he was quite unaccustomed to using Gothic detail, he had Pugin associated with him in the actual carrying-out of the work. The plan is a most masterly one, and it has been taken as a model by almost every country with an Assembly of two chambers. The appearance of the buildings has become so familiar that we probably do not appreciate them as much as they deserve, or realize how finely the parts are grouped and how successfully Barry has solved the difficult problem of incorporating Westminster Hall in his scheme. The idea of putting at one end of the river front a clock tower which is thoroughly Flemish in character was a most daring one, only justified by its complete success. Some historians have ranked Barry next after Wren and Inigo Jones in the roll of great English architects, and he certainly deserves a very high place. Among other examples of his work in London are the Reform Club and the Travellers' Club, in which he returned to the style of the Italian Renaissance palaces and showed that a Classical building in London

could be made dignified and imposing without a display of useless columns and pediments.

For a short time in the middle of the century Gothic had a complete ascendancy, and was used for buildings of every kind, from museums to railway-stations. Ruskin's teaching and the great public interest in the Exhibition of 1851 had aroused enthusiasm for all sorts of decorative arts and crafts; one result being that the early phase of the Gothic Revival which, very reasonably, aimed at taking up Gothic where it had stopped—i.e. at the Tudor stage—was brought to an end by the desire for foliated capitals and other medieval details, and the more elaborate "Transitional"[1] Style was generally adopted. We can see how this was used in such London buildings as the Natural History Museum, South Kensington (Waterhouse); St. Pancras Station (Scott); and the Law Courts (Street), begun in 1868 and only finished in 1884. It helps us to realize why some of the architecture of this period was so bad and meaningless when we read that, in the competition for the Law Courts, "Design" and "Plan" were treated as two different subjects—as though the architectural treatment were something that could be thought of quite separately and without reference to the purpose of the building! Street won on "Design," and from the point of view of plan his building is a failure. But by the time it was finished the battle was already going steadily against Gothic, for people had begun to realize that it was not a style which could be readily adapted to the complicated requirements of modern life in the way of planning, lighting, and other arrangements, and so was not a suitable style for general use.

The last quarter of the century was a time of chaos. Gothic

[1] i.e. twelfth–thirteenth century.

had proved a failure for general purposes, and no progress had been made towards developing a satisfactory modern style along Classical lines. But the revival of craftsmanship, in which William Morris and his followers played the leading part, had by the end of the century brought about a real improvement, at any rate in domestic architecture. The attempt to revive Gothic had shown how completely the traditions of craftsmanship and design were dying out under pressure of modern conditions. There is usually a cast-iron feeling of deadness about Mid-Victorian carving and details, and the general standard of taste in fittings and decoration was deplorable. Morris and his circle (which included artists like Rossetti, Burne-Jones, and Ford Maddox Brown, and architects like Norman Shaw, Philip Webb, and Nesfield) set themselves to train workers in every branch of craftsmanship. They wanted to show that even the ordinary simple objects of everyday use could be beautiful, just as they were in the Middle Ages. Their inspiration was mainly Gothic, and at first it was apt to produce far too much decoration; we are only now escaping from the elaborate patterns which were so enthusiastically applied to everything, from coal-scuttles to photograph frames. But we owe to these pioneers the splendid organization of training in arts and crafts which is now spread all over the country and, in day schools and evening schools, is available even to the poorest class of student.

The fact that domestic architecture had been restored, by the end of the century, to a fairly hopeful condition, was mainly due to the work of Norman Shaw and the other architects who were associated with Morris. These men applied themselves to the more intelligent use of the materials of building, and their pupils and followers went on to the study and improvement of the materials themselves. Here

they were going to the root of one of the great faults of nineteenth-century work, for much of the lifeless and mechanical dullness of Victorian buildings had been due to the industrial changes which gave us machine-made materials instead of hand-made bricks and tiles, with their variety of tone and texture. The architects of the Gothic Revival had been so much taken up with trying to reproduce " features " and historical detail that they did not realize how much of the charm of the old buildings they admired came from their actual texture and substance. In this direction, at any rate, the architects of the late nineteenth century succeeded in restoring to English architecture something of the gracious effect which had been lost many generations before. In the south of England, brick was their usual material, and they naturally looked for inspiration to the periods which had developed the most definite brick technique—particularly to the period of Queen Anne. But their frame of mind was still essentially Gothic, as they showed by the amount of detail they indulged in and their fondness for moulded brick string-courses and panels of brick ornament; also in the elaboration of the white painted balustrades and balconies (contrasting harshly with very red bricks and tile-hanging) and of the staircases and mantelpieces which, with their innumerable dust-traps, are the despair of modern housewives.

We owe especial gratitude to Norman Shaw in that he, more than anyone else, was responsible for restoring the fashion of dividing windows into panes by means of glazing-bars. The gaunt and repellent appearance of most nineteenth century houses is largely due to the plate glass windows, which are seen as blank openings in the wall, disproportionately big, and " out of scale " with the rest of the design. It is a great gain to divide these large dark

spaces into small panes carefully proportioned to the size of the building.

The characteristic style of Late Victorian times, as we see it in shops, public buildings, and town houses, may be described as a Romantic handling of Renaissance features, with a profusion of enrichment and a general restlessness due to the gables and dormers that continually break through the horizontal lines of the cornice or parapet. In

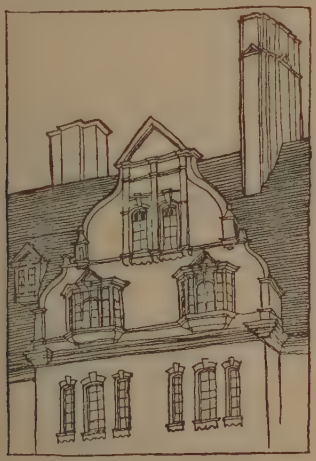


FIG. 36.—A brick gable by Norman Shaw.

a few departments, such as definitely ecclesiastical work, the Gothic revivalists had really attained their object; but in general, as compared with the position a hundred years before, little had been gained except sad experience, and very much had been lost. The best that could be said of the situation was that in certain directions a start had been made towards making up some of the losses.

CHAPTER XVII

AMERICA[1]

WE are so accustomed to think of America as a new country that it is rather a surprise to discover how old some of the buildings in the United States really are. The early settlers went on building in the Gothic manner up till about 1700, for when their fathers left England Gothic was still being used for all ordinary purposes. Several of the original Gothic houses are standing to-day, weather-boarded cottages which might have been transplanted bodily from some old village in Essex or Hertfordshire. There are even one or two brick houses with tall Tudor chimney-stacks and curved gables, such as Bacon's Castle in Virginia, built about 1670. The oldest house built of brick or stone is probably one at Medford, Mass., dating from 1634.

The style we chiefly associate with America is the native version of Georgian called "Colonial"—a style of spacious houses built of brick or, more often, timber framed and covered with painted weather-boarding; white painted doorways with fanlights and side-lights; wide verandas or "piazzas";[2] and sun-porches, often two storeys high,

[1] Although this chapter is headed "America," it only deals with the buildings of the United States. The ancient styles of Central and South America present all sorts of fascinating and tantalizing problems, reminding us of the many-staged temples of Mesopotamia or hinting at affinity with Chinese sculptured decoration; but they have died without issue. From the sixteenth century onwards, the architecture of Southern America has been predominantly Spanish.

[2] The painter Copley writes from New York to Pelham, who was

with wooden columns, extraordinarily tall and slender (Fig. 37). There were no professional architects in the country until the middle of the eighteenth century, and most of these houses were designed by amateurs or evolved by local builders and carpenters, with a good deal of help from pattern-books and illustrations of English details. In the South, the landowners were descended from Royalists who had left England after the Civil War; and many of them kept up great state, living on their plantations in

FIG. 37.—An American "Colonial" house.

large country houses planned upon English lines. Here every one built in brick or stone. But in the North, owing to the dampness of the climate and consequent trouble with condensation,[1] brickwork and masonry were both

building a house for him in Boston: "Should I not add Wings I shall add a peazer when I return, which is much practised here and is very beautiful and convenient." Pelham replies: "I don't comprehend what you mean by a peazer. Explain that in your next." And Copley: "You say you don't know what I mean by a Peaza. I will tell you then;" and proceeds to explain the obscure term.

[1] Moisture in the air condenses into drops when it meets a

uncommon, and many of the characteristic "Colonial" features arose through the translation of Georgian building into terms of carpentry. The slender pillars were partly due to this and partly to the influence of the brothers Adam, who imitated the proportions of the fanciful architecture shown in the frescoes found at Pompeii.

All good Colonial work is later than 1730, and the style only lasted until the War of Independence (1775); for as soon as the States had freed themselves from English domination English fashions went out of favour, and the Americans felt that they ought to develop a separate national style for themselves. The new Republic (as in the case of France, ten years later) turned to ancient Rome for inspiration, and the moving spirit in its architectural experiments was none other than Thomas Jefferson, the first Secretary of State. Jefferson, who afterwards became President, was an enthusiastic architect, and on his diplomatic visits to foreign countries took every opportunity of studying their buildings.

And now instead of following European fashions America began to lead the way. It was America that first took to adapting Classical temple designs to modern uses, setting a fashion which all Europe followed in the early nineteenth century. As early as 1785, twenty-two years before the Madeleine was built in Paris,[1] the versatile Jefferson copied the Roman temple (Maison Carrée) at Nîmes and produced the Virginia Capitol at Richmond. It was a somewhat remarkable copy, because in the first place the Capitol

surface which is colder than the air is. In the case of a timber-framed wall the inner surface is separated from the outside face by the air space between the timbers, and so its temperature varies less than in the case of a solid wall.

[1] See page 196.

was built in wood, and secondly Jefferson used the Ionic Order instead of the Corinthian, as being cheaper to carve !

In the Greek Revival America was again a pioneer and was many years ahead of the European countries. Latrobe built the Bank of Pennsylvania, on the model of the Erectheium at Athens, in 1799, and Greek fashions lasted till about 1850. This may be partly accounted for by American sympathy for Greece during her War of Independence (1821–27), which also left its traces in various place-names —Byron, Ypsilanti, Ithaca, Ionia. No other country in the world went through such a long period of definite Classical imitation as America, and this point is worth remembering when we come up against the splendid work on Classical lines which has been recently produced by American architects.

But still nothing in the way of a national style had appeared, and about 1840 architecture was at its lowest ebb in America just as it was in England. There was a dearth of architects and a dearth of ideas. We hear, for instance, that it became a recognized rule that churches should be designed in the form of Ionic temples, while Doric temples served as models for railway stations.

After the Civil War the situation was confused, but a little more hopeful ; for a few really clever designers had begun to appear—most of them trained in France. Among them were Richard Hunt, who worked in the French sixteenth-century manner, and Richardson, who produced in the 'seventies a rugged style called " Romanesque Rock-faced," an echo of the Gothic Revival, which had never had much influence in America. But a still more important development was the gradual building up of a system of architectural schools all over the country. The training was entirely on French lines, which meant that the students

had their attention concentrated on Classical work and on the application of Classical traditions to modern problems.

The period of groping experiment dragged on until 1893, when the opening of the Chicago Exhibition showed that at last a style had been discovered in which modern America could express itself. The credit for pointing the way belongs very largely to the architects who made up the great firm of McKim, Meade & White ; and their solution was a revival of Italian Renaissance—but a revival carried out in quite a new spirit.

We can only properly appreciate the sudden development of American architecture if we remember that whereas nowadays the very name of America at once suggests the idea of prosperity and luxury, fifty years ago the country was only beginning to emerge from the troubles and difficulties which followed the Civil War, and was very backward and provincial in everything that concerned the graces of civilization. Apart from Washington, which had been laid out on spacious lines, very few American towns had any dignity about them ; for most of the buildings were poor and low, while those which tried to be more imposing suffered from the general confusion of styles. The buildings of the Centenary Exhibition at Philadelphia in 1883 had been little more than a collection of sheds, and the fine lay-out of the Chicago Exhibition, with its white Classical buildings grouped round a Court of Honour, announced the beginning of a new period of development.

Various town buildings designed by the McKim firm had already begun to appear, such as the Boston Public Library (which Sargent was decorating with frescoes when he died), and the Century Club and Madison Square Gardens in New York ; and their effect was immediate and decisive. It was realized at once that here at last was the form of

expression for which America had been searching, and the French Renaissance and other competing styles went under almost without a struggle.

It is important to realize what the achievement of McKim, Meade & White really was. If all they had done had been to popularize one of the historical styles which so far no one had thought of using, it would not have amounted to very much. What they did was to show by their own work that Italian Renaissance could supply the inspiration which was needed for dealing with the problems of modern building design. They did not copy the form of Italian buildings, but they copied their spirit. If, for instance, they had to design a New York club, they did not design it as if it were a sixteenth-century palace in Rome, but rather as one of the great Italians might have designed it if he could have had a second lease of life in our own times as a naturalized American. There is all the difference in the world between this and the practice of most of the revivals we have described already.

The most urgent problem which American architects had to tackle was the designing of large commercial buildings, and they applied to it the Classical principles on which they had been brought up. Out of the scheme of the Classical "Order"—base, column, and entablature—the regular Renaissance façade had been evolved; the ground storey treated as a pedestal, supporting the main storeys with their ranges of windows, and the whole façade crowned by a cornice, with sometimes an attic storey added above it. To adapt this scheme to very high buildings it might be necessary to include two or three lower storeys in the pedestal stage, and above this the wall face could rise for an almost indefinite number of storeys without any horizontal breaks or other features, until the cornice was reached.

The very size of their buildings helped American architects to free themselves from the tyranny of superfluous decoration, which continues to spoil so much modern work in England and elsewhere. For when it came to designing a building several hundred feet high no one could help realizing that economy had to be practised (if only for financial reasons), and that the decoration must be concentrated at certain points, or at certain levels, where it would have most effect. Accordingly the designer had to rely on proportions, the shape and mass of his building, and the treatment of its surfaces; studying the effects of light and shadow, projections and recessed faces. He was forced to work on broad lines, and this is the very best thing that could possibly happen to anyone.

In most modern Renaissance buildings the windows, with their architectural trimmings, take up so much space that very little wall surface is left, and the building becomes a restless combination of different features. But in a big American building the more windows there are the less they seem to matter. They are boldly left as perfectly plain rectangular openings, and each window is so small in proportion to the whole expanse of the façade that, instead of the usual effect of thin stone strips showing between large black voids, we get the effect of a huge expanse of wall surface with a pattern of dark spots which merely serve to give it texture, like the dots powdered over the white ground of a wall-paper. This vision of a modern architecture of clean lines, simple masses, and surfaces on which the eye can rest without being "vexed and tired" by the constant distraction of meaningless features, is one of America's best gifts to the Old World.

New York being built on an island, the commercial part of the city could not expand laterally and so had to expand

Municipal Building, New York : by McKim, Meade and White

in a skyward direction, and as some of the new buildings began to soar high above their neighbours a new and exciting problem arose ; for instead of having only one important façade, in the usual manner of buildings on a street, they were now seen from all sides. They had in fact become towers, and had to be designed as such.

Now it is obvious that if one has to set about designing a tower one is not likely to seek inspiration from Classical buildings, for their principle is one of breadth and not height, horizontal lines and not vertical ones ; and so the soaring vertical lines of these buildings have quite naturally suggested the idea of a Gothic treatment. The Woolworth Building by Cass Gilbert—the most famous of all pre-war sky-scrapers—is an early example of how this was carried out, with extraordinary elaboration of detail in the way of buttresses, pinnacles, and so on.

Buildings in the centre of New York soared steadily skyward, but unfortunately, while the buildings rose higher and higher, the streets themselves had to stay the same width, so that they gradually threatened to become a series of gloomy canyons into which the sun and air could never penetrate. To get over this difficulty, " zoning regulations " have been introduced which restrict the height and form of buildings according to the particular part of the city in which they stand. Thus in a " $2\frac{1}{2}$ zone " one might be allowed to rise to a sheer height of two and a half times the width of the street, and any greater height could only be attained by a series of steps, the upper storeys being set back one foot, say, for every three feet of their height (Fig. 38). This arrangement is imparting quite a new character to town buildings, giving them a terraced effect like an arrangement of flat boxes piled one on top of another. It has also suggested various new shapes in which, instead of the upper

storeys being stepped back equally, certain blocks of the building are carried up while others are kept low, the general result having rather a Cubist air about it. The extension of this system and its effect on the appearance of large buildings is likely to be one of the most exciting developments of the next few years, both in America and in England, where we have already a taste of it in the new Devonshire House in Piccadilly.

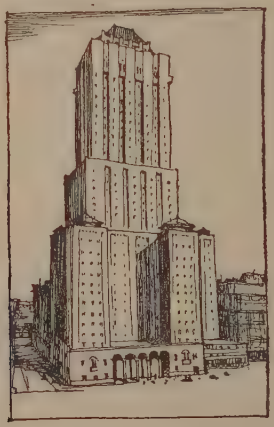


FIG. 38.—Shelton Hotel, New York.

Fine as many of the American high buildings are, their increasing numbers are producing a situation which may well cause anxiety. Traffic congestion is enormously increased by the employment of thousands of people in a single city building, and the appearance of sky-scrapers, placed at random and often ill-designed, is having a disastrous effect upon towns in every part of America.

In domestic architecture, the two main influences have

been the strong Georgian tradition of Colonial work, and enthusiasm for old English houses of the earlier periods. American architects have tried to capture something of the spirit of the buildings which belonged to their ancestors and ours—often with very charming results. In the planning and internal equipment of their houses they are, as we should expect, exceedingly clever and efficient. An abundant supply of rich clients has given them wonderful opportunities, and they have made the most of them. For the larger and more magnificent type of house they have again had recourse to the inspiration of Italian Renaissance work, and many of the gardens laid out by Charles Platt and others, with their terraces and steps, formal pools, fountains, and garden-houses, might have been transported from some Italian villa.

Every variety of climate is to be found in the States, and the architecture of the southern districts, where the sun is hot and constant, naturally takes on a special character. Here we find all sorts of delightful buildings which remind us of Spain or Southern Italy with their plain expanses of whitened wall and the deep shade of wide-spreading eaves and loggias.

There is a deeply ingrained tradition of Classical study in America, as we have seen, and side by side with modern buildings deriving from Italian Renaissance there are others which we might describe as "Classical Revival." But again it is not a "revival" in the ordinary sense of the word; and although in some of these buildings actual Greek or Roman themes have been used with a careful exactitude of detail, they are infused with a new spirit, and there is no actual copying of old work.

The quiet dignity and reticence of American architecture and its scholarly character, which has grown out of

systematic education on very definite lines, are seen best of all in these "Neo-classical" buildings, and especially in the many splendid memorials which have been put up to famous men, such as the Lincoln Memorial at Washington. As an example of overpowering effect achieved by the simplest means, there are few monuments in the world which can compare with the national memorial in honour of Washington—a plain obelisk 550 feet high (150 feet higher than Salisbury spire) and 55 feet square at the base.

Taken as a whole or taken separately, the American buildings of the last thirty years are probably better than those produced by any other country in the same period; and this ought to encourage us when we feel doubtful about really fine architecture being possible under the conditions of modern life.

Modern American use of Doric: the Lincoln Memorial, Washington

CHAPTER XVIII

MODERNISM IN NORTHERN EUROPE

THE attitude of looking forward in architecture is quite a new development. Right up to about forty years ago people seem for the most part to have been quite satisfied with the style of their own time; and if they weren't, they usually went back to look for inspiration in some earlier style which they admired. But now we are all expectancy and curiosity. In England we feel ourselves to be either marking time or, at the most, making experiments, and all the while we are peering about to see whether we can distinguish among the experiments something which heralds the coming of a New Architecture.

Nothing that we have produced so far seems to suggest that our own country is likely to lead the way. Before the war, French work and French methods stood highest in reputation, and to study at the Beaux Arts in Paris was the ambition of every English and American student. But no country can keep at its highest level indefinitely. France more or less created the modern science of planning and lay-out on axial lines, and she taught it to the world. But the French Renaissance style, after continuing at a consistently high level for two centuries and a half, tends to become overripe, and it has lately seemed to suffer from too much elaboration and a lack of initiative in facing the new order of things. After the war we felt that we were in a new world, and the focus of interest shifted definitely from Paris to New York. This was due, partly to the effect of the splendid American architectural magazines, and partly to an exhibition

of photographs of American buildings held in London in 1923, which aroused very great interest. But American conditions and problems are often entirely different from our own, and while keeping one eye on New York, English architects have had their attention violently attracted by some recent developments in Northern Europe, and particularly in Holland, Germany, and Sweden. Here for the first time we are brought up against really Modernist architecture, and it is important that we should decide upon our attitude towards it.

We shall find that we can very broadly distinguish in the Modernist movement two different schools of thought, or two methods of approaching the problem. These are the Constitutional and the Revolutionary. The Constitutional Progressive feels that his new style must be rooted in the past and must grow out of what has gone before. The Revolutionary says, "No. The old themes and systems have been worked out. It's time to throw them overboard and make a fresh start, developing entirely new forms suggested by our new methods."

Probably no country has had such an exciting architectural history in the last thirty years as Holland. We are inclined to think of the Dutch as a stolid race, and we might expect their buildings to be sober and dignified and perhaps a little unimaginative. Instead of this we find that they have produced some of the most audaciously Modernist buildings that have so far appeared in Europe ; and when we ask how the designs got past the local authorities, we receive the staggering information that the most revolutionary of all either emanate from the department of a City Architect or were commissioned by the Director of Housing !

We are told that the chief events leading up to the Modern Movement in Dutch architecture were, firstly, a great intellec-

tual awakening in 1880, and secondly, the revival of brickwork. The art of brickwork had been, of course, the foundation of all Dutch architecture, but it had been lost in the nineteenth century, when people considered brick an unseemly material which ought to be covered over with stucco and sham decoration. Just as in England, so in Holland the revival of craftsmanship led at first to a good deal of extravagance and over-elaboration. Sculptured ornament began to show certain new tendencies which were already being vigorously developed in Germany; figures became more rugged and conventional, and they seemed to grow out of the wall instead of being stuck on to it. The whole building, as a result, tended to become one mass instead of being made up of a lot of parts, all differently treated. There was also a deliberate search for new forms which had not been used before.

Then, after the war, we find the younger generation definitely preaching and practising revolution—under the patronage of government departments! The most brilliant of these revolutionaries was a young architect called de Klerk, who died in 1923, aged only thirty-nine. He was taken up by the Director of the Housing Department in Amsterdam, and given an opportunity of working out his ideas in the design of large blocks of flats. The results are certainly startling and original. Unfortunately it is impossible to judge them fairly from illustrations, because the colour and the texture of the brickwork are absolutely essential features of the design. De Klerk seems to have gone further than anyone in his passion for original forms, and often they seem fantastic and absurd. But he was absolutely sincere, and what offends us in his designs was, in all probability, only characteristic of one passing phase of his development. As Dr. Slothouwer, one of his con-

temporaries, tells us: "Every day was really new for him and brought the possibilities of unknown beauty." In the work of de Klerk and in recent buildings all over Holland (and also in Belgium) we find very striking effects obtained by original methods of bricklaying. Many of these devices were first used in buildings where the core of the structure was reinforced concrete and where, in order to express the fact that the brickwork was only a facing, the architects deliberately had the bricks laid vertically, or in undulating courses like waves, or in some other manner which showed that they were not intended to do any serious work. This brickwork shows amazing technical skill, and it is quite obvious that both the bricklayers and the general public enjoy these new methods and find them interesting and exciting.

In Holland we also encounter for the first time the architecture of an entirely new material—reinforced concrete. Ordinary concrete is described in technical language as being "strong in compression but weak in tension." This means that a block of concrete will bear a tremendous weight without being crushed, but if you lay a beam of ordinary concrete over an opening and then put a heavy load on it, it will immediately tend to break in the centre. Wood is exactly the opposite. You can crush it easily; but a wooden joist spanning an opening will take a very heavy weight (and will even bend in its length) without breaking, because of the long fibres which make it up and which all have to be fractured before the joist can give way. Concrete is "reinforced" by having steel rods embedded in it, so that the "crushing" strength of the concrete is combined with the "pulling" strength of the steel.[1] The steel rods are

[1] In the same way plaster is reinforced by mixing hair with it. By itself it has no tensional strength, and without the fibres of the hair to hold it together it would break off whenever it cracked.

first arranged in position inside a wood mould, or shuttering; then the liquid concrete is poured in and sets to the shape of the mould. If we keep this process in mind when we look at buildings constructed and finished in reinforced concrete, and think of them as being made in a mould instead of being built up of small blocks, it will help us to understand why they are so different in general character from what we are accustomed to. We may find that the forms become more "plastic" and less angular—for it is quite easy, by this method, to let one surface grow out of the other in swelling curves as in the Einstein Tower (page 230), instead of working in flat surfaces and hard angles—or we may find that the design keeps to plain rectangular forms, and suggests that, instead of being modelled, it has been cut out of some soft material like cheese. Both effects are appropriate in concrete, and we shall presumably get accustomed to them. But even without waiting for this we can appreciate Luthman's magnificent wireless station at Kootwyk (*frontispiece*), for although the forms and material are new it speaks to us in the common language of all great architecture. The carefully grouped parts combine into a mass which has all the dignity of a national memorial, while the clean lines and the great scale of the various features create an impression of power and efficiency. In this building Luthman conveys to us, just as clearly as though he were speaking, his own feelings about wireless; the romance and the hidden possibilities of this new fact in the world. One is reminded of Wells' "Lord of the Dynamos," for the whole design seems to proclaim that here is housed something awe-inspiring and mysterious.

At first sight the (brick-built) Bath-house at Hilversum, by Dudok (Fig. 39, p. 226), is not so easy to appreciate. Perhaps public ablution naturally suggests a less romantic

treatment than the mysteries of broadcasting. Anyhow, this is a stark building, and the only appeal it makes lies in the grouping of simple spacious masses. A tendency towards architectural Cubism is one of the characteristics we are continually noticing in the modern work of all countries, here we have it with a vengeance.

If the Bath-house strikes us as somewhat unsympathetic and inhuman, we may realize by looking at the School at

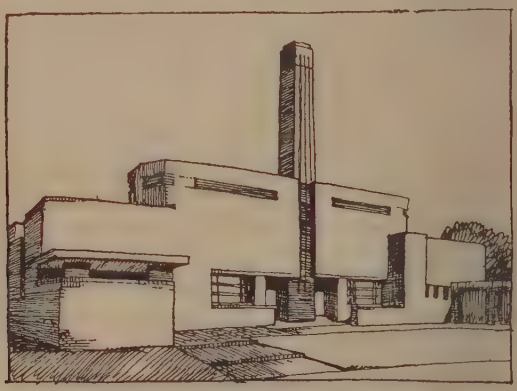


FIG. 39.—Public wash-house at Hilversum, Holland.

Hilversum (the work of the same architect and very similar in general treatment) how much of this effect is due to the flat roof (Fig. 40). The sloping roof of the school seems to give it at once a comfortable and homely air as contrasted with the other building. It is just the same with the many modern Dutch houses built with flat concrete roofs rather like lids, projecting all round far beyond the wall-face. They always seem to have an unkindly and undomestic appearance, which is emphasized by the fact

that the windows are often great blank rectangles of plate glass. The sloping roof, which in our climate was a necessity with the old-fashioned roofing materials, has become so much part and parcel of our Northern building tradition that it may take us a generation or two to get over the feeling of unhomeliness about flat-roofed architecture.

Another country which is producing interesting and original modern architecture is Sweden. Here we see a

Fig. 40.—School at Hilversum, Holland.

very different spirit at work. Swedish buildings generally give one the impression of being designed by men who have had a thorough classical education at a public school and university. They are very original in treatment and very modern in effect, but instead of being revolutionary and rejecting traditional forms they are full of references to past styles.

The Swedes have had very little national architecture of their own, so their architects often go far afield for their inspiration. The City Hall at Stockholm, which has

suddenly made Sweden a centre of interest for architects all over Europe, is a good illustration of this. Stockholm is built on a series of islands and sea-ways, and (without any direct attempt at copying) Ragnar Ostberg has been inspired to build his water-front over a colonnade which immediately calls up the memory of the civic palace in another island city, linking Stockholm with Venice. In order to make his reference more pointed, he has not only made his columns resemble their originals at the Doge's Palace in their short and stumpy proportions, but has given them the same peculiarity of rising straight from the pavement without any bases.

The sensation caused by this building was quite justified, for it must be counted, with Liverpool Cathedral, as being so far one of the greatest architectural achievements of the twentieth century. Stockholm is a city of 600,000 inhabitants—far smaller than Manchester—and it has spent over £1,000,000 on building and decorating the finest Civic Hall in modern times. "Building and decorating"—for, besides the architect, all the best craftsmen in the country have been engaged upon it, and wherever decoration is appropriate it has been bestowed in the lavish manner of the Middle Ages. There is, for instance, a great banqueting-chamber, called the Golden Hall, 145 feet long by 46 feet broad, with the whole surface of its walls and ceiling decorated in mosaic of gold and various colours. Such a building is only produced with the help of a very real general enthusiasm and interest on the part of the public. The bronze tiles with which the roof is covered were all presented by individual citizens as personal contributions to the work.

Although in Holland the architects of the Modernist school have an intense respect for the work of the past (for, as one of them expresses it, "one can love one's parents as well

The new City Hall, Stockholm

as one's children "), yet Swedish work is much easier to judge by the standards we are accustomed to, and so we may quite naturally find more in it that immediately attracts us. But Dutch work and Swedish work have certain obvious characteristics in common, and we shall find that these are the hall-marks of the New Architecture wherever it is beginning to appear in Europe. Firstly, there is a feeling for clean unbroken lines and broad surfaces—what the Dutch very expressively call " the return of the silent wall." And secondly, instead of concentrating upon the

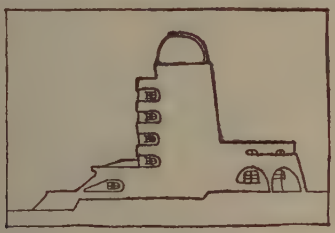


FIG. 41.—Einstein Tower, Potsdam ; the side view.

dressing-up of a façade, people seem to be much more interested in the general shape of a building, in its silhouette, and in the arrangement of its masses.[1]

We shall find that both of these characteristics appear very prominently in Germany ; but we shall also notice quite a new spirit, which can be illustrated by contrasting the Dutch wireless station with another reinforced-concrete building, Mendelssohn's " Einstein Tower " at Potsdam (page 230). What are we going to say about this Thing ? (" Building " seems, somehow, an inappropriate term for it.)

[1] We noticed this also in connection with America. In England we have only just begun to concentrate upon it, and it is surprising how few of our buildings have any interest of shape at all.

It is strange and menacing ; it disturbs us, for it seems to make no concession whatever to precedent or sentiment : at the same time there is something grand about its fierce vitality and the subtlety of its outlines.

To a certain extent its unprecedented shape is due to its unprecedented purpose—observations and investigations in connection with the Theory of Relativity : the cupola contains an instrument called a coelostat, and from it rays are reflected vertically into a subterranean laboratory, where they are thrown forward (refracted) to the instruments for measuring the spectra. The great point of interest is this —that here we have architectural form growing more directly out of the function or purpose of the building than in anything we have ever seen before. In Mendelssohn's own words, " the external form is conceived merely as flesh and skin in relation to the structure of the skeleton."

We are quite accustomed to this process of design in connection with all the general apparatus of life, and we realize that the shapes of bicycles and battleships and gasometers and windmills have been developed exactly upon these lines. We may even be vaguely conscious that the same principle lies far away at the back of the historical styles in architecture, and even of our fashions in clothes. But it is rather a shock to see it directly at work again before our eyes, and, to begin with, we may have a feeling that there is something unseemly about reducing a building to the level of a machine.

Mendelssohn has carried out other large buildings besides the Einstein Tower, but most of his designs are at present only in the form of sketches ; and these sketches are often so fantastic that one naturally says (in some cases, perhaps, with a feeling of relief), " Oh, yes, but of course that could never be built ! " In the Einstein Tower, however,

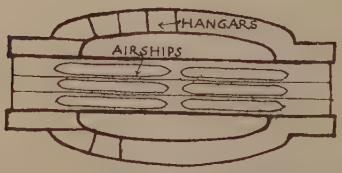
German Reinforced Concrete Design: the Einstein Tower at Potsdam

Mendelssohn shows us one of his weirdest designs successfully materialized, and in face of it we cannot help admitting that he has probably enough courage and ability to carry out any of these wild schemes, even the " Pleasure Pavilion " (Fig. 42, p. 232). Perhaps the finest of all is his design for an aerodrome building (Fig. 44). The plan is magnificently simple and efficient, with its broad fairways for six airships and the sweep of aeroplane hangars and workshops on each side. These lower buildings buttress the huge mass of the airship shed which rises above them, and the way in which the whole shape seems to crouch on the ground gives the most complete impression of shelter and security. At the same time, the smoothly rounded surfaces and the effect of a flowing " stream line " seem to have been reached on the very principles which govern the design of the airships themselves, so that once again we can see a close connection between the appearance of the building and its purpose. If this project of Mendelssohn's could be put in hand, it would be one of the most exciting architectural events of modern times.

Another architect who is in the vanguard of German modernism is Hans Poelzig. Mendelssohn's designs express what he calls " Raumlust " (" spatial joy "), a sense of the inside spaces shaping the outside form to their own requirements. In Poelzig's case, the impelling force seems to be an intense love of the rhythm which results from frequent repetition of one simple form. His work has been described as " optical music " ; and his most imaginative designs remind us of some of those strange geometrical formations we sometimes come upon in Nature, such as a honeycomb, or a mass of crystals. He designed a theatre for Salzburg in the form of a pyramid of twelve circular terraced stages, gradually diminishing towards the top and rather suggesting

FIG. 42.—A Pleasure Pavilion (Mendelssohn).

FIG. 43.—Industrial plant (Mendelssohn).



Plan.

FIG. 44.—A building in an aerodrome (Mendelssohn).

a combination between the Colosseum and the Tower of Babel. His completed theatre in Berlin (the Grosse Schauspielhaus) is unlike any other building in the world : the inside appears to have the effect of a huge cavern with a roof of hanging stalactites.

In spite of their restricted opportunities, the leaders of Germany's advanced school have shown themselves men of tremendous vitality and force. Behind them there is a large body of architects producing really fine buildings less revolutionary in spirit, but which would, all the same, rank with our most advanced work in England, showing all the qualities which we have mentioned as being typical of the Modernist movement in Europe. It seems quite safe to predict that, as the political barriers by which Germany has for many years been cut off from us gradually break down, the realization of what German architects are doing will cause great interest in England and elsewhere : and it may well come about that when we try to trace the origin of the Modernist movement in European architecture, with its characteristic emphasis on broad surfaces, massing of form, and the rest, we shall decide that more than anywhere else the original influences are to be found in the German architecture of the period immediately before the war.

CHAPTER XIX

THE MODERN POSITION IN ENGLAND: (i) HOUSES

AND now, what about the English architecture of to-day? We shall find that the situation is a good deal brighter in some directions than it is in others. As regards public buildings, shops, and town architecture generally, we most of us feel that we are in rather a bad way, though there are plenty of signs that things are getting better. In church-building our reputation stands high, and in house-building we may claim to be ahead of every one else: English houses (like English clothes) are studied and imitated not only in America but also by our neighbours in Northern Europe.

Let us begin by considering houses. As we saw in Chapter XVI, after the vogue of "period Gothic" had passed, new and more homely fashions came in under the influence of Norman Shaw and others; and right up to the end of the century the general type of country house was rambling and picturesque, with a good deal of ornate detail inside and out. The typical house of the 1900–1914 period has a new character, and shows the effects of another movement which began about 1880—a reaction in the direction of simplicity and restraint, which was bound to come in any case after such a surfeit of ornamentation, but was probably helped by the fact that life was becoming more expensive and by the necessity for providing smaller and cheaper houses.

The interest in ancient buildings had by that time 1880 reached the old cottages and farmhouses scattered all over

the country, and here we find the real basis of the twentieth-century house as contrasted with what had gone before. After the spiky crudities of Early Victorian days, and the wearisome elaboration practised by Norman Shaw, there came back to English houses a feeling of quiet homeliness. Men like Ernest Newton and Professor Lethaby put us for ever in their debt by the pioneer work they did both by their teaching and by their own practice ; showing how beauty could be procured, without an elaborate display of architectural features, by the simple lines of an unbroken roof, the restful expanse of plain wall-surface, and the careful study of proportions.

The study of materials became almost a religion. A brick house, for instance, had its " brickiness " intensified by minute attention to the texture and colour of the bricks, the thickness of the joint and its form (recessed, perhaps, so that the edges of each brick should be clearly seen), and the colour of the mortar. All its details were worked out on lines suggested by the brick-sizes and shapes, in contrast to the cutting, shaping, and moulding, which the bricks had undergone in the previous period. After years of stained and varnished deal and pitch-pine we saw again the gracious texture of natural wood ; and oak, like brick, became a holy thing, to be used with due deference to its feelings and in such manner as would show off its beauty to the best advantage. All these principles have now become firmly established, and the influence of the English pioneers can be traced as far away as America, Holland, and Sweden.

In the houses built about 1905 we often notice a slightly " Nouveau Art " tinge, which coloured, in particular, the work of C. F. A. Voysey, a clever architect whose designs at that moment set the fashion not only in England but also abroad. Even now " Nouveau Art " influence is not every-

where extinct, and most people can recall some building inspired by Voysey and distinguished by triangular buttresses, rough-cast walls with a green slate roof, black chimney-pots, green shutters with heart-shaped piercings, and long wrought-iron door-hinges with bulbous ends.

In the last ten years before the war the Garden City movement was in full swing, and at Hampstead and Letchworth we can see what rapid progress had been made in producing small houses which were perfectly suited to the new conditions of modern life, full of variety and interest in design, and thoroughly in keeping with English tradition. One can hardly realize that this had all been developed in twenty or thirty years.

Since the war, economy has been the chief consideration. We have spent years in experimenting to see what system of design and what methods of construction would prove least expensive, and as a result we have the Modern House —the house of the housing schemes, and the larger house built by the private owner. Financial stringency has made it very compact and generally plainer and less picturesque than pre-war houses. If the designer is competent this will not matter very much ; it may even be a gain. Where the house probably suffers most is in the use of poorer materials. It is often rough-cast, for bricks hard enough and pleasant enough to use externally are now rare and expensive ; and even with a good colour and texture rough-cast is apt to have a bald effect, whereas the lines of brick joints (like the small panes of a window) are useful in giving scale to the building. The chimney-stacks are thin and low, and the pitch of the roof is flattened to save roofing material and rafter length ; this flattening may mean that slates or some unpleasant patent roof-covering have to be used, in a position where all the surroundings demand tiles and a

decent slope. These are only some of the ways in which the modern house comes to look, as it often is, meagre and starved in comparison with its older neighbours.

Inside, it is a very different state of affairs. True, the spacious effect of a wide hall and rambling passages has gone ; smaller rooms have broken the tyranny of cumbrous ancestral furniture, and there is less space for the storage of accumulated possessions : but everything is compact and comfortable. Under the pressure of domestic difficulties and financial stress, the planning of the modern house has been developed to a pitch of efficiency at which it can be compared with the planning of a battleship : every inch of space is used, everything is arranged to save unnecessary walking about, and the materials of every part are chosen with a view to cleanliness and saving of labour. The modern labour-saving house is no museum of complicated gadgets : its success lies in the scheming of the different parts of the plan upon commonsense lines.

As regards the design of their exteriors, modern houses may be broadly divided into two classes—the formal and the informal. In the formal type the Classical feeling is noticeable, and the design is more or less symmetrical, with windows regularly spaced and set one above the other. In the informal type, symmetry is not considered so important, and the windows and gables are allowed to come in any position that best suits the plan.

A great many of the houses built after the War had to be designed as plain rectangular blocks for the sake of economy, and the architects' only hope of giving them a decent appearance seemed to lie in achieving a balanced arrangement of the windows, chimneys, and other features. It was quite natural, under the circumstances, that they should cast back for inspiration to the delightful rectangular houses

of the eighteenth century, and in the last few years there has been a very noticeable movement in the direction of the Georgian manner. The " Neo-Georgian " style of house, with white-painted sash windows spaced symmetrically in a red-brick front, is certainly the type which is at present most in favour ; so it may be an appropriate moment to say something about this question of symmetry in house-design.

Our outlook on the world may possibly be coloured by the fact that the human body is in the main a symmetrical affair ; anyhow, it is a psychological fact that symmetry in a building—quite apart from any other considerations —gives us a natural feeling of satisfaction, and counts in its favour. A symmetrical or a well-balanced arrangement will immediately help to produce a restful and quiet appearance, and this is one of the effects we specially aim at in designing houses.

But there is also something of the swing of the pendulum about the present enthusiasm for formalism. Among the men who were working at the end of the last century to restore a simpler and more homely manner of building, there was an extreme section who proclaimed, in tones borrowed from Ruskin, that Beauty was Truth. " Don't worry," they said, " about Design : for if a building meets its requirements in a straightforward manner, and if the exterior honestly reflects the plan and the construction, it will—given good materials—*ipso facto* be beautiful." It is a very attractive and comforting doctrine, but unfortunately the country-side is marred in all directions by straightforward and honest buildings—workmen's houses, railway sheds, warehouses, and gasworks—which not even the best materials would have saved from hideousness ; and it is partly in reaction against this teaching that architects are nowadays concentrating more strongly upon definitely formal design.

In our enthusiasm for Neo-Georgian fashions we are, however, rather apt to overlook one or two important considerations. First of all there is the "period" snare—the temptation to produce eighteenth-century designs for twentieth-century houses. We cannot live "period" lives, and there is something rather absurd about many of the rooms which one sees illustrated, month by month, in popular journals: modern rooms which are so perfectly Georgian in character that a comfortable padded arm-chair would be entirely out of place in them. The same sort of criticism applies to the "Old World" ideal, pursued by people who take a strange pleasure in making a sitting-room look like a farm-house kitchen, with dark oak beams to break up the restfulness of plastered walls and ceilings, and fireplaces of rough brick hung about with brass candle-snuffers, warming-pans, and other miscellaneous pieces of obsolete household gear.

Then again, the Georgian style calls for strict regularity in the spacing of windows, doors, and chimney-stacks; and there will always be a likelihood of the internal arrangements being sacrificed, to a greater or less degree, to obtain this. For there is nothing about a modern house which makes it likely that it will lend itself to a symmetrical treatment. Rather the reverse indeed, because it is made up of a few rooms which differ greatly in size and in detail. Even if the front door comes conveniently in the centre of the façade, the circumstances of the site may demand that on one side of it there should be the principal sitting-rooms and on the other a range of small rooms—cloak-room, scullery, coal-house, etc. There will be large windows on one side and small on the other: those in the sitting-rooms should, by modern standards, be kept low, so that people sitting down may still have a view out of them, while the

scullery window, at least, must be kept high, so that it may clear the sink. In such a case external symmetry may only be obtainable at the cost of doing violence to internal convenience.

In designing the small modern house, there is generally one possible arrangement of the plan which best meets the requirements of the case as regards aspect, accommodation, and service, and there is not very much margin for variations. If we come across a small house on Georgian lines which achieves perfect symmetry without sacrificing anything to the exterior effect, we may put down the designer as either exceedingly competent or exceptionally lucky. Only too often we shall find, on examination, the sort of thing which occurs in a very charming house by an architect of great renown. The long staircase window in one side wing is perfectly balanced by a similar window in the opposite wing; but unfortunately this second window happens to belong to the bath-room, where it occupies most of one wall, with the glass-line continuing right down to the floor level!

But, symmetrical or not, houses are nowadays on the whole quieter in form and less assertive in manner than they were a generation ago, which is all to the good. One feature which shows this very clearly is the chimney-stack (Fig. 45). The heavy cappings and wide projections which were popular in the nineteenth century have been gradually reduced, until we have even passed the stage of having no projection at all and begun to set in the last brick courses.[1]

[1] These projections were originally formed to throw off the rain, which otherwise soaked down through the brickwork into the house. The modern custom of putting damp-courses in chimneys where they emerge from the roof has made this precaution less necessary.

In the same way we have revolted against the spiky effect of the tall chimney-pots in which our ancestors apparently took pleasure, and after passing the stage of having low pots bedded in cement so as to be almost invisible, we now dispense with them altogether whenever the position of the house allows.

But even though we have made them less aggressive, chimneys are still essential features in the design of our

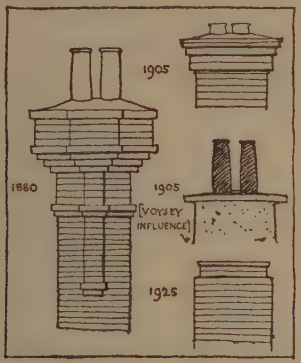


FIG. 45.—Fashions in chimney-heads.

houses. A mean chimney-stack makes a mean-looking house ; and one of the interesting problems which has to be faced in the near future is how to design houses with no chimneys at all, or only very small ones, which will not look bald and unhomely in English surroundings. Even now we are not quite keeping pace with modern developments in this matter, and we go on providing chimneys far in excess of actual requirements. Many houses nowadays have only one or two coal fires, and otherwise use gas—the fumes of which can be easily disposed of without the help of chimney-

stacks, because no draught is needed : yet their chimneys are still made goodly and tall, and the general appearance of the houses is much helped thereby. We may have an uncomfortable feeling that much of the bulk of these stacks is merely padding, but we cannot at present see our way to being more honest about it.

The existence of problems like this one, coupled with the great variety of our local materials and local styles, should ensure a healthy and interesting future for English house-design.

CHAPTER XX

THE MODERN POSITION IN ENGLAND: (ii) BUILDINGS IN GENERAL

IN church-building, as we said at the beginning of the last chapter, our reputation stands high, and it has lately been crowned by Sir Giles Gilbert Scott's achievement at Liverpool. His cathedral is certainly the most notable, and perhaps the most surprising, building of our time. Compared with it, the churches of the nineteenth century were mere antiquarian exercises; for though Liverpool Cathedral has its roots in the past, it is built to meet the needs and to reflect the ideals of the religious life of our own day. And just as our life and outlook to-day are, on the whole, more influenced by Classical and Renaissance times than by the Middle Ages, so this building, although it is Gothic in structure, is essentially Classical in spirit. This sounds a hard saying, but it should not be difficult to explain.

For us in England, Gothic has associations which make it the natural style to use for devotional effect, and Liverpool is Gothic not only in its forms but in its construction. Its stone vaults, for instance—some of which are more daring and more complex than any medieval vault—are honest masonry, unassisted by steel girders or reinforced concrete. Where the Classical spirit shows itself is in the *unity* of the whole design and the way in which the parts are kept subordinate to it. There is a quite un-Gothic symmetry about the plan, with a nave and chancel of equal length set one on each side of the great central Preaching Space above which the tower will some day stand; and

everything is done to heighten the impression of the cathedral as one single mass. Thus the usual Gothic division into three storeys (nave-arcade, triforium, and clerestory) is abandoned : the stalls, reredos, and other fittings are not treated as furniture put into the building but as part of the original design ; and the restlessness of Gothic detail is kept in check by the avoidance of sudden spikes and pinnacles.[1]

Now in all this simplification, and in the effect of the huge scale and the cliff-like expanses of wall, we can recognize the ideals of the " New Architecture," which are founded upon the Classical ideal of Unity ; and we realize more fully the wonder of this building which combines so perfectly the inspiration of the past and of the present, and which, as we saw in the case of the City Hall at Stockholm, could never have been produced but for the enthusiastic way in which people of all classes have combined to help on the work.

In the design of public and commercial buildings English architects have so far been very much more cautious, or more conservative, than their neighbours ; and as compared with the exciting modern buildings of America, Holland, Germany, and Sweden, much of our recent work looks dull and commonplace. We use reinforced concrete a good deal for purposes of construction, but we have hardly started to design in it. The exhibition at Wembley (1924)

[1] The sense of unity is of course greatly helped by the fact that as each part of the Cathedral is built it is completed in full detail, instead of being left as a shell to be equipped later with stained glass and other enrichments. In this respect the great wealth and enthusiasm of the City of Liverpool has enabled us even to surpass the builders of the Middle Ages, and to give Sir Giles Scott a position of control such as, in all probability, no church architect ever held before.

was a great opportunity for experiment in this direction, but its ponderous buildings gave little suggestion of the possibilities of the new material ; in many cases the concrete was laid in blocks and jointed to look like masonry.

At present we are chiefly occupied with the design of steel-framed buildings, and in this we have not made anything like the same progress as America : in general form most of our town buildings do not depart much from the familiar Renaissance lines. To a large extent our backwardness in this respect may be attributed to the restrictions which so sternly regulate the height of our town buildings ; for we can see that in America new ideas and new conceptions of design have been stimulated by the exciting psychological effect of great masses soaring up into the sky.

In our own large towns no building on a street may have a frontage more than 80 feet high. The result is that if we look at the ordinary street buildings in London we shall find that almost all of them consist of the same number of storeys—five or six—and that the different arrangements of these storeys form a limited series of variations on what we may call the " standard Renaissance façade " ; a bottom storey acting as a plinth, a row of columns above, attached to the wall and often several storeys high, an entablature or at least a cornice, and generally another (" Attic ") storey above.

This is of course just a development of the Classical " Order "—base, shaft, entablature—and we can still recognize it clearly even in a façade which has no columns or pilasters, by the intervals or spacing of the storeys. The first strong horizontal line still marks the top of the plinth ; about three storeys up we come to another corresponding to the cornice, and then there is the attic above, with other storeys, perhaps, in a steeply-sloping roof.

On this system we can produce quite an imposing façade for a public building, but when we apply it to the case of a shop all sorts of difficulties confront us. The bottom storey, for instance, ought to appear as a strong, solid base; and that impression was originally emphasized by rustication and by keeping the openings few and small. But this is the very storey on which our shopkeeper client relies to display his goods. He grudges every inch of lost window-space, for he knows quite well that nowadays a building can be supported on a row of steel columns each a few inches thick, and he cannot see why the whole frontage, for which he is paying so much, should not be used to its fullest advantage. Harrods' Stores show us the sort of thing that happens when he has his way. Here we see a building which has literally no visible means of support; the lower part of the façade shows nothing but plate-glass, and the heavy stonework of the upper part is all in the air.

It was soon realized that a building like this could never look dignified, and in the London shops built in the last twenty years or so we can see how the architects have tried to hit the happy mean between large windows and a satisfactory amount of solid support in the ground storey. Norman Shaw made his Piccadilly Hotel stand firmly enough on its range of rugged arches, but the piers were much too solid to please the shopkeepers. Nearly all the solutions give us the effect of a building standing on piles, and although in some few cases the piers really look strong enough to carry the weight above, even then it is a very modified triumph. All the "pile" solutions are inevitably fore-doomed to failure, for the Renaissance scheme of design demands a solid plinth, and until there is more solid than void, a greater area of stone or brick than of glass, the result can never give us real satisfaction. We had better face the

facts and admit that the shopkeeper's demands are perfectly reasonable. The huge expanse of glass is the *raison d'être* of the whole building, and it is for the architects to evolve some satisfactory scheme of design in which it can find a place.

The whole problem is very closely connected with another which is, perhaps, the most generally discussed architectural question of the day: namely, whether we are to go on dressing up steel-framed buildings in stone trimmings which bear no relation to the skeleton underneath, and if not, what form we are to give to them. Where can we find a path that will lead us to a new style really appropriate to our own times—a style in which we can design modern buildings in a straightforward manner?

We cannot at present treat steel-framed buildings frankly as what they are, by leaving the steelwork exposed to view, for unless continually and carefully painted it would rust and perish; the effects, too, of exposed steelwork buckling and twisting in a fire are disastrous, and the bye-laws compel us to case it in fireproof material. The Selfridge building in Oxford Street was (with Sir John Burnet's Kodak Building in Kingsway) one of the first London buildings which definitely proclaimed, by reducing the stonework to a mere architectural skeleton, that it was not constructed of solid stone; and when it first appeared it was considered a very advanced piece of design. Of its kind it is a fine building, but it is only the skeleton of something much finer (Fig. 46, p. 248). This type of façade—*but* with a large amount of wall surface and a large excess of solid over void—was perfected by the greatest designers of Renaissance times, and is universally approved. Does it not therefore stand to reason that if we gut the design completely—hacking away all the substance between the columns and entirely altering the proportion of void and

solid, while leaving the general scheme of proportions practically unchanged—the result cannot still be satisfactory? If one arrangement was right the other must be wrong, and very wrong indeed. The piers on the street level are massive, but they do not fill the rôle of the solid ground storey. Even the entablature is not spared, but is brutally perforated by large window-openings, so that the columns, having no beam to carry, seem to have become meaningless.

FIG. 46.—Selfridge's: the skeleton of a stone façade.

Surely this is the trouble with most of our architecture in this manner? Modern requirements, whether for shops or office-blocks, demand a preponderating amount of window-space, and yet we go on clinging to a system of design which requires the exact opposite, a preponderating amount of solid wall. Once again we are brought to the conclusion that we are trying to do impossibilities, and that sooner or later we are bound to gain freedom by abandoning the traditional features of stone architecture and evolving

something more consistent with our new methods of building.

Among recent buildings in England we can already notice a good many experiments in this direction. The policy generally adopted is that of allowing the surface of the building to express the pattern of the steel framework, with a strong emphasis on the vertical lines (in contrast to the Renaissance system which divided everything into horizontal storeys, and as a natural expression of the increased height of modern buildings). The steel skeleton consists of a series of slender uprights, called stanchions, spaced as widely as the ideal window arrangement requires, and, between them, horizontal girders corresponding to the floor-heights. The depth of these girders is much greater than the width of the stanchions, so that if we let the outer skin of the building represent the form of the steel skeleton we get a general pattern such as we see at Adelaide House (page 250).

This huge building, which stands at one end of London Bridge, was designed by Sir John Burnet, and finished in 1925. It probably aroused more interest and stimulated more discussion than any recent building in London ; for people felt that there was something portentous about it and wondered, rather fearfully, whether it was to be taken as a foretaste of the street architecture of the future. As it starts right off the river bank, far below the road-level of the bridge, it rises straight up to a much greater height than we are accustomed to, and the impression of height is increased by the strong vertical lines of the design. One interesting point is the way in which the outer walls are " battered " : that is, instead of being built vertical they have a quite perceptible inward slope, such as we see in Egyptian pylons.[1] It gives the building an air of massive

[1] See page 13.

strength, and the reminder of Egypt which it awakens appears to have captured the fancy of the architect, for the design of the crowning cornice seems to be a definite reference to the regular Egyptian cornice with its curious hollow roll, shown in Fig. 1, p. 14.

When we have got over our first surprise at these unexpected historical references, we shall find that the form of the building is perfectly consistent with its purpose. It is a huge office-block, a honeycomb of separate rooms, needing a vast number of separate windows ; and see how well these windows are provided for. The standard Renaissance façade was designed for palaces and other buildings in which one floor or one section of the front contained the most important rooms and so was treated with special architectural elaboration. As applied to commercial buildings this scheme of design continually leads us into absurdities. Mr. A.'s room has to have a stone balcony, and a pediment over the window, because it comes in a certain position in the façade ; while Mr. B.'s next door, just as large and just as important, has none of these adornments. Contrasted with all this sort of thing, Adelaide House gives us a feeling of freedom. We have escaped from the complications of tradition, and we realize gratefully that with the new type of design the window problem is going to have no terrors for us. However many windows are wanted, we can work them in quite comfortably, and, as in the case of the American buildings described in Chapter XVII, instead of being treated as separate features they almost become part of the general texture of the wall.

Adelaide House gave us great hopes for the immediate future of town buildings. When we seemed to be in an *impasse* there suddenly appeared a way out. And it is no

A modern Office Block : Adelaide House, London

reflection upon its excellence if we find, a year or two later, that these hopes have become rather less bright. After looking at it a good deal, and seeing one or two buildings which it seems to have inspired, we may feel that anything

FIG. 47.—Bush House, from the Strand.

which is to take its place comfortably in the ordinary London street must be rather more urbane and rather less inexorable. There may be something in this respect to be learnt from an almost contemporary building, Bush House, at the foot of Kingsway (Fig. 47). Here we have the first example in England of a modern American office building, but it

is only a fragment, the central portion of a scheme which will probably never be completed, and the block that lifts its flat top so high above the neighbouring roofs is only a base for a tower which should have surmounted the whole. So it is all the more remarkable that this accidental piece of an American building should, after standing for a year or two in London, be winning its way to general approval and exercising a real influence on our taste and our judgment of other modern work.

As contrasted with Adelaide House, Bush House seems to make concessions to tradition and custom in certain details, such as its graceful stone balustrades in the style of the Italian Renaissance. Its many windows are comfortably absorbed into the design without the feeling that they are confined within the lines of a rigidly-scored diagram. It is this lightness of touch that gives it an air of friendliness, helping it to take its place in a neighbourly spirit which modern buildings often lack.

Bush House showed us for the first time the terraced effect which is produced by the American system of setting back the upper storeys, described on page 217. The stepped outline is very pleasant, and there are many indications that it is likely to become a familiar feature in our large buildings of the next few years. As we said, Bush House is only a fragment, and even if it were complete it would probably not rank very high as compared with other American buildings. But it has come to us with the tonic effect of fresh air, and this and other buildings have proved that people in England are quite ready to appreciate an architecture of clean-cut lines and "the silent wall," though so far we have made less progress in that direction than other countries have.

Most of all, perhaps, people will be glad to escape from

the tyranny of fussy ornament. Besides the idle stone columns stuck on to a steel framework, the ordinary town building is still plastered with entirely meaningless decoration. It is considered the proper thing that a building of a certain class or in a certain position should have " enrichments," and these are carried out at great expense and in most cases applied so unintelligently that they might just as well have been left out. To begin with, they are usually in themselves devoid of value or interest. In most periods craftsmen have had no difficulty in evolving decoration for their buildings. Even the Gothic Revivalists produced a spate of ornamentation which, if it does not often appeal to us, was at any rate perfectly spontaneous and sincere. At the present moment inspiration hangs fire, and when we look at one of our new buildings with its panels and cartouches, dumps of Classical weapons and equipment, or dropsical cupids struggling with ponderous garlands, we can mentally picture the draughtsman who has to evolve " Details of Carving " for this space and that, painfully endeavouring to draw inspiration from the past. It will hardly be believed that Doric friezes of cows' skulls, and panels of ancient Egyptian emblems, have been solemnly carved within the last year or so on the fronts of large West-End drapery establishments : yet so it is ! Even worse is the dead monotony of standardized detail repeated continuously round a building—a quarter of a mile, perhaps, of Greek " egg and dart " pattern, at so much a foot run—often set under a high cornice, where from the street level it only shows as a dark smear.

In contrast to this, and as a practical example of how ornament should be used, let anyone who has the good fortune to visit Cambridge go and see the new Clare College block by Sir Giles Gilbert Scott. There is a good deal of

stone carving about the exterior, all carefully restricted to doorways and other places where the emphasis of special enrichment is fitting, and to positions where it can be clearly seen. Every piece of detail is beautiful in design, with a fresh originality obviously enriched by a profound study of Greek work. The carving of every form shows the perfection of subtle craftsmanship, and the discerning visitor will move from one part of the building to the other with the same eager enjoyment which would hold him among the treasures of a Florentine church. Contrast this with the new million-pound premises of Messrs. Somebody and Others in Piccadilly. Who is going to stand and gaze at the twenty-seventh (exactly identical) rendering of the smirking lady's head on the keystones, or, craning his neck, compare the thirteenth panel, representing fat boys holding baskets, with the twelfth? Even the original model from which the weary craftsman worked was probably a lifeless affair and incapable of inspiring anyone. How much better to pay some really good sculptor half the amount that was wasted on all this padding, and let him do a small series of panels or figures, to be set in places where they would really enrich the building!

Economy in the use of ornament, vitality in its design and execution, and care in placing it, are all features which, wherever the New Architecture begins to show itself, will be found amongst its hall-marks.

In its shape and outline, the large building which arose in 1926 on the site of Devonshire House in Piccadilly is the most advanced example so far seen in England of the modern Cubist tendency in American work. The grouping of the flat-roofed blocks and the sheer height of the walls are very fine and impressive. But, perhaps as a concession to British commercial ideas, it has been thought necessary

A good Shop-front in Tottenham Court Road, London

to smother the façade with decoration, using the accepted type of architectural *motif* and ranging Ionic pilasters along the lower storey.

It is unfortunate for London that so many of the most important parts have had to be rebuilt just at the present time, when our street architecture is still in an experimental stage, instead of ten years later, when we hope we shall have arrived at some more definite conclusions. For so far as town architecture is concerned, the most important object to be achieved is a certain consistency and harmonious relationship between the buildings which make up a street or a group. The building of Kingsway and the new Regent Street has impressed this lesson upon us, and has also shown us how extremely difficult it is to obtain any better results while modern commercial ideals are what they are. A satisfactory and dignified street, we all recognize, can only be produced if the design of the individual buildings can be made subordinate to the design of the whole group, as it was in the old Regent Street. "But how do you expect," demands the shopkeeper, "that I shall consider my façade a satisfactory one if it subordinates itself to the general scheme and makes no attempt to attract attention?" And so—unless we impose a uniform design, as has been done with good effect at the Quadrant end of Regent Street, and thereby make every one dissatisfied—we get a street which is merely a succession of exclamation marks; a row of buildings all shouting "Look at ME!"

The only hope of improvement seems to lie in more definite control by the civic authorities. This should be possible when the general public becomes more interested in the future of its towns, and when the big commercial firms attain to a more enlightened attitude—or merely recognize (as some do now, and many more in America)

that good architecture pays. Balance-sheets will no doubt continue to be the criterion, so the public can help in this matter by encouraging the pioneers.

The rebuilding of Regent Street, besides helping to focus public interest on problems of street architecture, seems to have ratified a general decision that stucco is not an allowable finish for self-respecting buildings. It is quite in keeping with the modern commercial spirit that every large firm should insist on building in the most expensive materials it can obtain: but under modern conditions it is unlikely that many of our buildings will be allowed to stand for fifty years, so it seems rather absurd to clothe them in stone façades designed to last for centuries. It is quite possible, as we have seen, to produce delightful architecture in stucco, and it would give us new opportunities for evolving original and interesting designs. A very small fraction of the amount saved on the initial cost would cover the expense of regular repainting, and the buildings would be continually fresh and bright instead of looking cheerful for a year or two and then relapsing into a state of blackness or streakiness which destroys the effect of their expensive architectural treatment.

But in commercial circles the use of stucco would probably be taken as a confession of financial weakness, so we can understand how it has fallen out of favour.

* * * * *

And what of the future? Perhaps the most important fact to notice is that there are now architectural schools all over England sending out every year a stream of young men highly trained in design and keenly alive to the latest developments in foreign countries. Whatever may be the character of the work these young men will produce when their time comes, we can be fairly certain that it will not

be dull: that—so far as they are allowed—they will try to express the spirit of their own time rather than that of some past age.

We might do worse, in our concluding chapter, than consider what our attitude towards them is going to be.

CHAPTER XXI

CONCLUSION. THE LAYMAN AND ARCHITECTURE

ARCHITECTURE is sometimes called "The Mistress Art," but actually the architect is even more in bondage than those who practise the other arts. He is in bondage to the popular taste; and this is why it is so important that the outside public should take a rather more active and intelligent interest in architectural matters than they do at present.

The painter or the writer can find some outlet for his thoughts and visions, even if at the time no one recognizes him or pays any attention. But the architect cannot build except when somebody gives him a commission; he must, generally speaking, obtain his client's approval of everything he designs; and if he is dealing with a client who is unsympathetic or obstinately prejudiced there will be continual friction, which must cramp his style and take the interest out of his work. Every one of us contributes to form the public opinion which influences that client and his views on architecture, so every one of us is in a manner responsible for the buildings which are put up round about us.

If we think that our architecture is in a bad way, we ought to be continually on the look-out, so that we may recognize and encourage anyone who is working to produce something better. To this end, our interest and sympathies might work on rather more generous lines than they do at present. For we cannot expect to attain to a New Architecture all at once; so we must be prepared to dislike a good many of the

buildings produced in the experimental stages, and, in spite of that, to applaud them and to encourage their designers.

In architecture, as in everything else, pioneers need courage and patience. When young Mr. Inigo Wren, A.R.I.B.A., is commissioned to design a new cinema at Southend, he knows quite well that he can successfully produce an imposing building on stereotyped lines. His clients will like the handsome range of Ionic columns in stone, standing in front of a concealed steel framework, and the conventional scrolls of carved foliage: they will feel that these things give the building an air of importance. On the material side he has everything to gain by playing for safety. If, instead, he tries to produce something on more original lines, he knows that it will be disliked and attacked by a large section of the public, and that, as he will be feeling his way in the design, the appearance of his building may actually be less successful than it would have been if he had been content to handle familiar themes with a certainty of the effect that they would produce. But even so he will be contributing something to the solution of one of our modern problems.

If he takes the risk, and if we do not like his building, we should at any rate try to appreciate what he has aimed at. We must realize that, however we may inveigh against the useless accumulation of Classical Orders, cupids, trophies, and swags of foliage, all these things have become part of the familiar background of our lives, so that if we are to turn away from them we may find that we suffer from a feeling of strangeness and discomfort until we become accustomed to the new methods. If we have the cause of good architecture really at heart we must be prepared to take some risks, and also to take some pains to understand the questions at issue.

Our problems may seem more complicated, as all the conditions of our life are more complicated, than those of previous generations, but we are more likely to discover some guiding principles among the records of the past than anywhere else. We shall realize, on the one hand, that change and development is an essential sign of health, and that an Ionic column consisting of a steel stanchion cased in stone is more or less analogous to a felt hat shaped like a Roman helmet: on the other, that all our intellectual life is founded upon the culture of Greece and Rome and Renaissance Italy, so that to attempt to produce a style which should deliberately exclude all reference to the past would be a policy of Bolshevism, illogical and foredoomed to failure.

The more we know about the architecture of other days, the better fitted we shall be to hold the balance between respect for our great inheritance of tradition and the desire for fresh growth and new adventure.

FINIS

BOOKS
ABOUT ARCHITECTURE

IT would be a formidable task to compile a book-list to cover such a wide field as is glanced at in these chapters; but a few suggestions for further reading may be of use.

Belcher's "Essentials in Architecture"—short, clear, and admirably illustrated—is the best book in the language dealing with general architectural principles, and should be read as an introduction to the whole subject. Next to it, and bearing more upon historical styles, comes "The Works of Man" by March Phillipps. Statham's "Short Critical History of Architecture" and Fiske Kimball and Edgell's "History of Architecture" are probably the most readable books covering the whole historical ground. Banister Fletcher's "History of Architecture" should be on the shelf of everyone who can afford to buy it, as the standard book of architectural reference, unique and unchallenged.

FOR THE EARLY PERIODS.—Bell's "Architecture of Ancient Egypt," "Pre-hellenic Architecture in the Aegean," and "Hellenic Architecture"; Anderson and Spiers' "Architecture of Greece" and "Architecture of Rome."

ROMANESQUE AND GOTHIC DEVELOPMENT.—Baldwin Brown's "The Arts in Early England," Vol. II (Anglo-Saxon); Jackson's "Reason in Architecture"; West's "Gothic Architecture in England and France."

ENGLISH GOTHIC.—Power's "English Medieval Architecture," consisting of three small volumes of pocketable size, full of clear illustrations; and, for library reading, Prior's "History of Gothic Art in England," and Bond's "Gothic Architecture in England": the latter is the standard book of reference for English Gothic.

RENAISSANCE.—Anderson's "Italian Renaissance Architecture," a fine book on a subject about which little has yet been written for the general reader.

ENGLISH RENAISSANCE.—Blomfield's "History of Renaissance Architecture in England"; Gotch's "The English House" and "The Growth of the English House"; Willmott's "English House Design."

FRENCH RENAISSANCE.—Ward's "Architecture of the Renaissance in France" (2 vols.).

BAROQUE.—Briggs' "Baroque Architecture," and Sacheverell Sitwell's "Southern Baroque Art."

GOTHIC REVIVAL.—Eastlake's "History of the Gothic Revival in England" (1872), and Willmott's "English House Design."

MODERN ARCHITECTURE.—Manning Robertson's "Laymen and the New Architecture"; Howard Robertson's "Architecture Explained"; Mieras and Yerbury's "Dutch Architecture of the Twentieth Century"; Ahlberg's "Modern Swedish Architecture."

Among the many other books which might be mentioned are :—

"Theory and Elements of Architecture," Atkinson and Bagenal.
"Descriptive Handbook of Architecture," Buckmaster.
"The Story of Architecture," Waterhouse.
"English Architecture at a Glance," Chatterton.
"Everyday Life in Roman Britain," Quennell.
"History of Everyday Things in England," Quennell. Vol. I, 1066–1499; Vol. II, 1499–1799.
"Form and Colour," March Phillipps.
"The Architect in History," Briggs.
"Short History of the Building Crafts," Briggs.
"The Arts Connected with Building" (Lectures).
"Man and His Buildings," Attlee.
"The Things which are Seen," Trystan Edwards.
"Good and Bad Manners in Architecture," Trystan Edwards.
"Architectural Style," Trystan Edwards.
"The Pleasures of Architecture," Williams-Ellis.
"Prelude to Architecture," Newton.
"The Touchstone of Architecture" (Essays), Blomfield.
"The Mistress Art" (Essays), Blomfield.
"The Substance of Architecture," Butler.
"The Architecture of Humanism" (Renaissance), Scott.
"The Charm of the English Village," Ditchfield.
"The Manor Houses of England," Ditchfield.

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